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ABSTRACT

This document outlines the research and development plans of a consortium of organizations whereby they might (1) collect training materials to meet identified needs for persons with development and evaluation skills in education and industry, (2) establish a system for data collection and decisionmaking to manage the individualized instruction of persons in development and evaluation training programs, (3) find trained personnel to meet the immediate needs of educational and industrial organizations, and (4) make arrangements for delivery and finance of training programs to meet long-range needs for pre- and in-service training in development and evaluation. Each objective is documented and detailed into specific outcomes and/or tasks. Subcontracts and budgets are presented along with a time line for project completion. Related documents are EA 003 901, EA 003 902, and EA 003 903. (Author/RA)

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THE PROPOSAL

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for the MIDWEST EDUCATIONAL TRAINING CENTER

Submitted by:

Upper Midwest Regional Educational Laboratory
University of Minnesota
Educational Research and Development Council
of the Twin Cities Metropolitan Area
Control Data Corporation
Southwest State College, Marshall, Minnesota
Iowa State Department of Education
Minnesota State Department of Education
North Dakota State Department of Education
South Dakota State Department of Education
Wisconsin State Department of Education

EA 003 900

The Proposal

for the MIDWEST EDUCATIONAL TRAINING CENTER

Training for Development and
Evaluation in Education

Prepared by:

William Ammentorp
Wayne Welch
Geraldine Evans

Upper Midwest Regional Educational Laboratory
1640 East 78th Street
Minneapolis, Minnesota 55423

December 14, 1970

The Proposal

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UPPER MIDWEST REGIONAL EDUCATIONAL LABORATORY

1640 EAST 78TH ST. MINNEAPOLIS, MINNESOTA 55423 612-861-4421

December 14, 1970

Dr. John C. Egermeier
Acting Chief
Research Training Branch
National Center for Educational
Research and Development
U.S. Office of Education
400 Maryland Avenue, S.W.
Washington, D. C. 20202

Dear Dr. Egermeier:

I am enclosing the series of documents contracted for in response to RFP 70-12. The agreed-upon objectives of our design activity, and the pertinent documents are:

1) a detailed study of personnel needs in schools, industries, laboratories, and research and development centers.

   Design Document I (The Need for Research, Development, Dissemination, and Evaluation Personnel in Education) presents the results of a manpower survey conducted by our Consortium.

2) an analysis of training inputs.

   The Proposal for a Midwest Educational Training Center outlines the capabilities and contributions of members of the Consortium in training for development and evaluation.

3) a plan for training instruction researchers, developers, evaluators, and support personnel.

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The Honorable Frank Nikolay
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Dr. Max Goodson, Professor
University of Wisconsin
Mrs. Cora Harvey, Teacher
Waterloo, Iowa
Mr. August Little Soldier
National Indian Ed. Advisory Com.
The Honorable Richard Larsen
Lt. Governor, North Dakota
Dr. Richard Gousha, Superintendent
Milwaukee, Wisconsin
Mr. Carl Gordon Nelson, Exec. Secretary
Associated School Boards of S.D.
The Honorable David Obey
U.S. Congressman, Wisconsin

EXECUTIVE DIRECTOR
David N. Evans

Design Document III (The Management System) describes the organization and management of an individualized training program for specialized personnel.

4) a proposal whereby the Consortium might implement the above plan.

The Proposal for a Midwest Educational Training Center states a program of action and budgets pertinent to implementation of the training plan.

5) a paper outlining the theoretical structure on which instructional development is founded.

Design Document II (Conceptual Papers Defining the Knowledge and Skills Required to Function as Educational Developers and Evaluators) states the rationale underlying training in educational development and evaluation and provides a collection of training objectives.

I hope that you will agree that our contracted work is completed and that the Consortium deserves careful consideration for receipt of continued support for research and development in this important area.

Sincerely,

William Ammentorp

WA/mb

Enclosures

Prime Contractor for Operational Phase: Upper Midwest Regional Educational Laboratory

Project Director for Operational Phase: William Ammentorp, Director
Wayne Welch, Co-Director

Principal Participants in Operational Phase

Institutions	Individuals
Upper Midwest Regional Educational Laboratory	William Ammentorp Jon Morris Geraldine Evans
Educational Research & Development Council	Tom Stark
Division of Educational Administration	Vernon Hendrix
Department of Psychological Foundations	Wayne Welch Paul Johnson John Rhetts James Terwilliger
Control Data Corporation	Robert Fallon Tom Mehring
Southwest State College	Richard Wollin Roger Raymond

Major manpower needs being addressed:

1) Persons capable of carrying out evaluation of educational products and programs in schools and industries.

2) Persons skilled in identifying training problems and developing instructional materials and techniques to resolve said problems.

Unique features of rationale, content, and process of the proposed design:

The Consortium is a unique combination of educational and industrial talent with a common interest in development and evaluation of educational products and programs. The proposed design develops and delivers instruction in educational evaluation and development to persons in industrial and educational organizations. The guiding principle of the Consortium is that training should be provided in terms of desired terminal behaviors rather than in terms of courses taken or time spent. To this end a set of terminal behaviors has been developed for educational developers and evaluators. Training modules designed to achieve these behaviors will be designed and administered on an individual basis. A detailed monitoring and management system has been developed to implement this individualized training program.

Part 1 - THE ABSTRACT

The consortium of organizations listed on the cover sheet of the document proposes to engage in cooperative efforts to attain the following objectives:

1) A collection of training materials to meet identified needs for persons with development and evaluation skills in education and industry.
2) A system for data collection and decision making to manage the individualized instruction of persons in development and evaluation training programs.
3) Trained personnel to meet the immediate needs of educational and industrial organizations.
4) Arrangements for delivery and finance of training activities to meet long-term needs for pre- and in-service training in development and evaluation.

The following pages outline the research and development plans of the Consortium whereby the above objectives might be realized. Each objective is documented and detailed into specific outcomes and/or tasks which the Consortium will undertake to carry out. Subcontracts and budgets are presented along with a time line. for project completion.

The reader should consult the three "Design Documents" prepared by the Consortium from which the above four objectives were derived. These are:

Design Document I - "The Need for Research, Development, Dissemination and Evaluation Personnel in Education."

Design Document II - "Conceptual Papers Defining the Knowledge and Skills Required to Function as Educational Developers and Evaluators."

Design Document III - The Management System."

Part 2 - PROPOSAL DOCUMENTATION AND DETAILED OBJECTIVES

Training Priorities for Education Development and Evaluation

The training outcomes selected by the Consortium were derived from two sources: studies of projected manpower needs and analysis of knowledge and skills needed to fill roles in educational development and evaluation. The primary source document for determining personnel needs is Design Document I (DDI) The Need for Research, Development, Dissemination and Evaluation Personnel in Education. The conclusions of DDI indicate that initial training for education development and evaluation should be primarily focused on public elementary and secondary school roles. These roles may be categorized as supervisory, where the task emphasis is on evaluation of educational materials and programs, or technical, with a task emphasis on development and use of instructional materials. DDI further documents the magnitude of personnel needs in the five state region (Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota).

Design Document II (DDII) outlines the knowledge and skills needed for persons who are to carry out the above roles. DDII specifies hierarchies of objectives which comprise the clusters of skills required by educational employers. The combination of these two Design Documents results in the identification of training materials which the Consortium proposed to develop. The objectives below summerize the materials development phase of this project:

1) Training materials for instructional problem analysis and programming.
2) Training materials for analysis and use of instructional technologies.
3) Training materials for evaluation design and interpretation.
4) Training materials for organizing and implementing evaluation in education.

A Management System for Individualized Instruction

The Consortium recognizes that persons seeking training in educational development and evaluation are likely to possess varying degrees of knowledge and skill needed for these activities. Accordingly, there has been an over-riding concern for individualization of instruction during the design phase of the project. This has resulted in a plan for a managment system for training which is described in Design Document III (DDIII).

The proposed management system is essential to the individual focus of this project but has wider potential application. It is similar in conception to the instructional management system presently in operation at Southwest State College. Indeed, project staff has participated in design work at that College and anticipates that Consortium attainments will be closely integrated with the management of individualized instruction at the undergraduate level.

Based on DDIII, the Consortium proposed to develop and test an instructional management system to include:

1) Data gathering instruments and procedures.
2) Files for storing information related to instruction process, training content and student behavior.
3) Procedures and/or computer software for system implementation.
4) Design and analysis of reinforcement practices used during training.
5) Provisions for analysis of system outcomes and costs.

Provisions for Delivery of Instruction

The Consoritum plans to meet immediate training needs of schools and industries in the region during the materials test phase of the project. While this training will be of immediate benefit to educational practice, it does not insure that organizational arrangements will exist for long-term delivery of needed training. Consequently, the Consortium proposes to test alternative delivery systems and, finally, to select the most suitable arrangement(s) for continuation of training in educational development and evaluation. Continuation, in this context, implies that financial support will be available not only for additional training, but for identification of new training needs and development of new and/or improved instructional materials as well.

Provisions for instruction delivery will be tested during Phase III of the project. The following objectives express the outcomes of that testing:

1) Training site(s) for delivery of instruction.
2) Practicum experience for trainees.
3) Fee structures adequate to meet continuation costs for training in educational development and evaluation.
4) Articulation of training with credit and compensation practices in schools and industry.
5) Recruitment practices to insure continued student input.
6) Procedures for identification of new training needs.
7) Training site staffing design(s) to insure instruction development and implementation.

Project Evaluation

The purpose of evaluation is to provide Consortium members with information for making decisions. These decisions fall into two major categories: those related to the content of training offered and those involving training methodology. Each of the four objectives of the project (listed on p. 1 of this proposal) are focal points for evaluation activities.

Objective 1, "A collection of training materials to meet identified needs for persons with development and evaluation skills in education.", is the basic statement of project intent against which program content must be evaluated. Since program content is initially chosen to meet needs articulated by employers, there is close correspondence between personnel needs and training content at the outset of the project. Evaluation must therefore be primarily con-

cerned with providing information about developing training needs and with the degree to which training influences on-the-job performance of trainees. Two evaluation strategies seem appropriate for this objective:

a) Status studies of educational development and evaluation:

Periodic study of educational and industrial organizations results in estimates of numbers of trained persons needed to fill jobs. Detailed analysis of job descriptions and the relationship between development and evaluation roles and organization goals identifies costs to new content; evaluators provide essential information for changes in program focus.

b) Trainee follow-up studies:

Longitudinal study of individual trainees gives information as to the kinds of tasks trainees perform on-the-job as well as indications of quality of performance. This is essentially a behavioral analysis problem; under what conditions do trainees engage in behaviors of which they have been trained? If trainees do not have opportunities to exercise their skills, program content should be altered. If, on the other hand, opportunities for action exist and trainee behavior is inadequate, training methods can be changed.

Objective 3, "Trained personnel to meet the immediate needs of educational and industrial organizations.", is derived from Objective 1. It refers more directly to the relationship between training and employer's needs in the immediate service area of the Consortium.

The evaluation of Objective 3 is basically a cost-effectiveness problem. The associated decision question is, 'Does the program provide locally needed training at equal or less cost to individuals and/or employers than other training options?'. The project manpower survey (Design Document I) indicates a baseline of need for personnel with development and evaluation skills. If the program meets these needs in a cost-effective manner, a positive evaluation of Objective 3 is in order.

Program management goals are summerized in Objective 2, "A system for data collection and decision making to manage the individualized instruction of persons in development and evaluation training programs.". This objective is detailed in Design Document III along with evaluation guidelines for determining attainment. Over-all evaluation of the project has the study of the management system as a component.

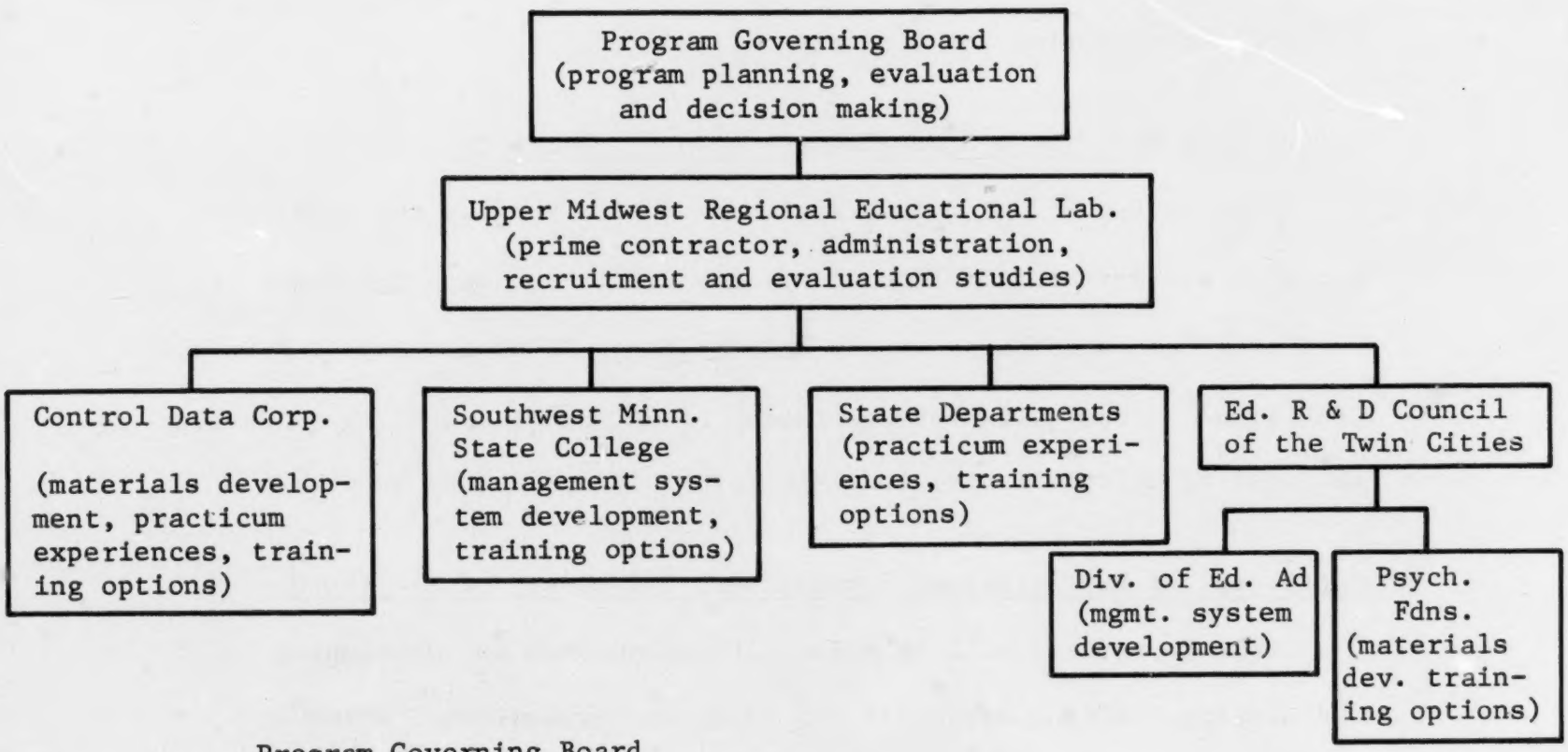
Evaluation of the attainment of Objective 4, "Arrangements for delivery and finance of training activities to meet long-term needs for pre- and in-service training in development and evaluation.", is carried out in the market for education development and evaluation training. A positive evaluation of training delivery systems is found in the balance sheet of the training organization. The most suitable training design is that which meets Objectives 1, 2 and 3 and can support training research and development as well as direct training costs entirely from purchased training. The various training delivery systems to be tested by the Consortium can be evaluated on this basis.

Part 3 - CONSORTIUM ORGANIZATION AND RESPONSIBILITIES

The administrative organization of the Consortium is designed to insure maximum probability of attaining project objectives without binding the project to an inflexible structure. Accordingly, the administrative arrangements proposed in this paper are subject to evaluation by members of the Consortium and can be changed to alternate designs at any time. This potential for change is reflected in the coordinate responsiblities depicted in the organization chart below:

Figure I

Consoritum Organization
and
Project Responsibilities


Program Governing Board (program planning, evaluation and decision making)
Upper Midwest Regional Educational Lab. (prime contractor, administration, recruitment and evaluation studies)
Control Data Corp. (materials development, practicum experiences, training options)
Southwest Minn. State College (management system development, training options)
State Departments (practicum experiences, training options)
Ed. R & D Council of the Twin Cities
Div. of Ed. Ad (mgmt. system development)
Psych. Fdns. (materials dev. training options)

Program Governing Board

Program decisions are made by the Board. This Board is comprised of members of the project design staff, representatives of

school districts and representatives of training organizations. It is responsible for all new program directions and for employing the project director. Program governors determine new administrative arrangements for later phases of the project and approve budgetary decisions made by the Project Director.

Upper Midwest Regional Educational Laboratory

UMREL will serve the role of prime contractor for the Consortium. It will provide administrative and support services to project staff and will deal with all problems related to student recruitment, support and program evaluation. Project administration will insure that subcontractors meet provisions of their contracts and that their respective efforts are coordinated and directed at project objectives. Through its administration of training, UMREL will determine the most suitable organization for delivery of training.

Educational Research and Development Council of the Twin Cities

ERDC serves as an administrative mechanism whereby the contributions of the Division of Educational Administration and Department of Psychological Foundations of the University of Minnesota can be obtained. ERDC also - through its representation of 44 school districts - provides an input of information as to needs for training in area schools.

Department of Psychological Foundations, University of Minnesota

This Department will be primarily responsible for developing and testing training materials for education evaluation. Several members of this Department have participated in the design phase of the project, and will continue to give important service to

the project. Additionally, Psychological Foundations will provide one of the training options to be tested by the project.

Division of Educational Administration, University of Minnesota

The Division will design and test the instruction management system for the Consortium. In addition to this work, the Division will assist UMREL in carrying out necessary project evaluation studies.

Control Data Corporation

Staff members of CDC will develop and test instructional materials related to education development. This training will consist of currently available CDC materials, materials available from other suppliers and new materials to be developed. In addition to development activity, the Control Data Institute will serve as a test site for delivery of training to school and industrial personnel. Cost for such training would be borne by the Prime Contractor.

Support personnel skilled in instruction development will be made available by CDC to those of the Consortium who are engaged in preparing training materials. CDC services will also be supplied to the Consortium for work on data files and other aspects of the instruction management system.

Southwest State College, Marshall, Minnesota

SWSC will be one of the test sites for delivery of training programs. It will supply opportunities for training to teachers in training as well as those educators presently in service. SWSC will also provide an opportunity to test features of the

instruction management system and a baseline of information regarding schools against which the impact of the training effort can be evaluated.

State Departments of Education

The five state departments of Education participating in the Consortium fill two major functions. They identify the content and scope of training needs which the Consortium must confront. They also become sites for training and for practicum experiences for trainees in the later phases of the project. All five departments have contributed to an analysis of training needs during the design phase of the project and are planning active involvement as the project matures.

Part 4 - PROJECT TIMELINE AND PHASES

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	1/71	6/71	1/72	6/72	1/73	6/73	1/74
Phase I	Planning, Staffing / Materials Evaluation						
Phase II		Materials Development / Management System Design					
Phase III			Materials Test (training) / Management System Test				
Phase IV				Materials Revision & Production / Delivery System Development			
Phase V					Implementation and Evaluation		

Part 5 - BUDGET SUMMARY (Totals by Project Year)

	6/71	6/72	6/73	6/74
1) UMREL				
Project Administration	6,000	18,000	19,000	20,000
Support Sources	2,500	5,000	5,500	6,000
Project Evaluation		8,000	9,000	12,000
Training Costs		109,000	82,000	47,000
Travel	2,000	2,000	2,000	4,000
Subtotal	10,500	142,000	117,500	89,000
2) ERDC				
Project Administration	1,000	4,000	4,200	4,400
Secretarial	2,500	2,250	2,250	2,250
Subtotal	3,500	6,250	6,450	6,650
3) Psychological Foundations				
Salaries (Prof)	6,500	34,000	43,000	45,000
Staff	3,000	10,000	14,000	14,000
Support	2,000	10,000	10,000	5,000
Materials	5,000	10,000	5,000	5,000
Subtotal	16,500	64,000	72,000	69,000
4) Educational Administration				
Salaries	9,000	18,000	20,000	22,000
Secretary	2,500	5,000	6,000	6,000
Materials	____	2,000	4,000	4,000
Subtotal	11,500	25,000	30,000	32,000

5) Control Data Corporation			(est.)	
Materials Evaluation	10,398		20,000	Not
Materials Development	20,000	97,841	40,000	available
Pilot Testing		13,864		estimate
Production		15,317	12,000	approx.
Consulting	2,000	3,600	5,000	73 level
Stipends			20,000	
Subtotal	32,398	130,622	97,000	90,000
6) Southwest State College				
Staff	3,750	7,500	8,000	8,000
Travel and per diem	500	500	500	500
Subtotal	4,250	8,000	8,500	8,500
Total	78,648	375,872	331,450	295,150

SUMMARY OF BUDGET DATA FROM ABOVE DATA
FOR FIRST 18 MONTHS OF PROJECT

Total to 6/71 ..... $ 78,648

Total to 6/72 ..... $375,872

Total Indirect Costs for first 18 months ..... $ 32,030
(Figure represents 8% times $400,374 for program development, implementation, administration, and clerical salaries)

Total Employee Benefits for first 18 months ..... $ 54,854
(19% times $288,703)

Total $541,404

SUMMARY OF BUDGET DATA FROM 6022 FORMS
FOR FIRST 18 MONTHS OF PROJECT

Special Training Projects	$ 3,000
Post-Doctoral Training	$ 37,000
Graduate Training	$ 69,000
Program Development [Figure includes all salaries for program development, implementation, project administration, and clerical personnel, plus indirect costs and employee benefits.]	$432,404
Total	$541,404

Part 6 - CONTRACTS

Prime Contractor: Upper Midwest Regional Educational Laboratory

UMREL will undertake to provide administrative services, project support and study of training designs for the Consortium. It will:

1) Administer all project funds and apportion said funds to subcontractors at its decretion.
2) Provide office space and secretarial support services to the project.
3) Recruit, compensate and evaluate the performance of trainees.
4) Coordinate contributions of project subcontractors.
5) Make summary evaluation studies and reports as indicated in the proposal.

Budget:

	to 6/71	6/72	6/73	6/74
administration	6,000	18,000	19,000	20,000
support services	2,500	5,000	5,500	6,000
project evaluation		8,000	9,000	12,000
trainee costs		109,000	82,000	47,000*
travel and per diem	2,000	2,000	2,000	4,000
Total	10,500	142,000	117,500	89,000

* Post doctorate and graduate student support will continue, however, stipends for teachers and administrators will now become cost effective.

VITA

William Ammentorp

Experience Background:

9/67 - Present	Director of Research*, Upper Midwest Regional Educational Laboratory, 1640 East 78th Street, Minneapolis, Minnesota.
1/67 - 9/67	Executive Director*, Southern Minnesota Educational Research & Development Council, Coffman Building, Rochester, Minnesota.
1/65 - 7/66	Dean of Men & Assistant Professor of Sociology, Carleton College, Northfield, Minnesota.
9/63 - 12/64	Associate Director of Admissions & Instructor in Sociology, Carleton College, Northfield, Minnesota.
9/61 - 8/63	Associate Director of Admissions, University of Chicago, Chicago, Chicago, Illinois.
1/59 - 8/60	Admissions Counselor, Carleton College, Northfield, Minnesota.

*These positions were held in conjunction with present position as Associate Professor in Educational Administration at the University of Minnesota.

Memberships in Professional Organizations:

American Educational Research Association
Association of Higher Education
Phi Delta Kappa
Twin City Operations Research Society

Publications:

1. Surveys and Reports:

   a. "Research in Program Planning." Upper Midwest Regional Educational Laboratory, May, 1968.

   b. "A Rationale for Teacher Education." Upper Midwest Regional Educational Laboratory, November, 1968.

2. Addresses and Papers:

   a. Address: Associated Colleges of the Midwest, Student Personnel Conference, Monmouth, Illinois, 1965.

b. Paper: "Social Thought in Educational Administration." University Council for Educational Administration, Columbus, Ohio, Spring, 1967.

c. Paper: "Perspectives on Human Development." Brothers of the Christian Schools, Annual Conference, Adamstown, Maryland, Spring, 1968.

d. Paper: "Social Organization for Special Education." U. S. Office of Education, Regional Conference, Minneapolis, Minnesota, Spring, 1968.

e. Paper: "Politics and Education." Claremont Graduate Seminar, Claremont, California, July, 1968.

f. Address: "Research on the Religious Life." Brothers of the Christian Schools, National Conference, Joliet, Illinois, Summer, 1968.

g. Paper: "Prerequisites for Systems Analysis." American Educational Research Association Symposium, Los Angeles, California, February, 1969.

3. Monographs, Books, Articles:

a. Monograph: "A System for Information Search and Retrieval." Upper Midwest Regional Educational Laboratory, November, 1968.

b. Monograph: "A Format for Research and Development in Education." Upper Midwest Regional Educational Laboratory, November, 1968.

c. Article: "Essay Review." Educational Administration Quarterly, III, 3, Autumn, 1968, pp. 85-89.

d. Article: "Prerequisites for Systems Analysis: Analytic and Management Demands for a New Approach to Educational Administration." With Marvin F. Daley and David N. Evans, Educational Technology, September, 1969.

e. Book: The Committed, St. Mary's College Press, Winona, Minnesota, 1968.

f. Book: (Chapter) "Social Perspectives on Religious Renewal." Approaches to Renewal (Washington, D. C.: Center for Applied Research on the Apostolate, 1970).

g. Book: (Chapter) "Social Behavior and Administrator Training." With Brian Fitch, The Social Sciences in Educational Administration, J. Culbertson (Ed), Columbus, Ohio, University Council for Educational Administration.

4. Research Reports:

a. "Diffusion of Innovation in Two Ethnic Groups." Unpublished M.A. Paper (In Press), Department of Sociology, University of Chicago, 1963.

b. "The Influence of Social Support in Decision Making." Unpublished Ph.D. Dissertation, College of Education, University of Chicago, 1964.

c. "The Christian Brothers Study: Some Preliminary Findings." Brothers of the Christian Schools, Lewis College, Lockport, Illinois, 1968.

d. School Finance in Southern Minnesota, with Dean E. Fritze, Southern Minnesota Educational Research & Development Council, Spring, 1968.

e. Staffing Southern Minnesota Schools, with Dean E. Fritze, Southern Minnesota Educational Research & Development Council, Spring, 1968.

Consulting Activities:

1967-1968	Consultant to Brothers of the Christian Schools - National Study of Religious Life, 1967 (20 months).
1968-Present	Consultant to Minnesota State College Board - Design of a Teacher Education Program at Southwest Minnesota State College, Marshall, Minnesota.
Summer, 1967	Consultant to Upper Midwest Regional Educational Laboratory.
1967-Present	Section Editor, Educational Administration Abstracts.

1967-Present	Editorial Consultant, Prentice-Hall Publishing Company, Englewood Cliff, New Jersey.
1968	Research Consultant to Instructional Simulation Incorporated, Macalester College, St. Paul, Minnesota.

VITA

Geraldine Ann Evans

Education:

1968 University of Minnesota
Ph.D., Educational Administration (emphasis in personnel administration), minor field - Educational Psychology, collateral field - Industrial Relations

1965 University of Minnesota
M.A., Educational Psychology (counseling emphasis)

1960 University of Minnesota
B.S., Social Studies Education (sociology emphasis)

Work Experience:

1970 Project Coordinator, RFP 70-12 Project, UMREL, Minneapolis, Minnesota

1970 Educational Consultant, Educational Programs, Minneapolis, Minnesota

1969-70 Educational Consultant, Educational Management Services, Inc., Minneapolis, Minnesota

1967-68 Research Assistant, Educational Research and Development Council, University of Minnesota, Minneapolis, Minnesota

Summer, 1966 Personnel Consultant, Northwestern Bell Telephone Company, Minneapolis Office, Minneapolis, Minnesota

Summer, 1965 Employment Counselor, United States Employment Service, Minneapolis Office, Minneapolis, Minnesota

1963-66 Secondary School Counselor, Anoka Public Schools, Anoka, Minnesota

1960-62 Secondary Teacher of Reading and Social Studies Hopkins Public Schools, Hopkins, Minnesota

Consulting activities include negotiations, personnel administration, staffing and organizational problems, inservice training, staff attitude surveys, community attitude surveys, preparation of administrative manuals, organizing and publishing data and projections regarding manpower needs, wages, benefits, and other economic data.

Published Works:

1. First-Line Supervision in the Public Schools (a monograph), Interstate Publishing Company, Danville, Illinois, March 1968.

2. Job Satisfaction and Teacher Militancy: Some Teacher Attitudes (a monograph with John M. Maas), Interstate Publishing Company, Danville, Illinois, 1969.

3. Preparing the Negotiations Proposal and Background Materials for Negotiations (two manuals prepared for the Minnesota Federation of Teachers), Fall 1969.

4. Educational Clerical Personnel, Educational Management Services, Inc., 151 Silver Lake Road, New Brighton, Minnesota 55112, January 1970.

5. Grievance Procedures in the Educational Setting, Educational Management Services, Inc., 151 Silver Lake Road, New Brighton, Minnesota 55112, January 1970.

6. Merit Pay for Teachers, Educational Management Services, Inc., 151 Silver Lake Road, New Brighton, Minnesota 55112, January 1970.

7. Class Size and Numerical Staffing Adequacy, Educational Management Services, Inc., 151 Silver Lake Road, New Brighton, Minnesota 55112, January 1970.

8. "A Study of Teacher Negotiations," The Minnesota Teacher, Winter 1969, Vol. XI, No. 2, pp. 14-17.

VITA

David N. Evans

Function:

Mr. Evans sets Laboratory policies and procedures with the recommendations of the Board of Directors, and the Laboratory Coordinating Committee. He communicates the Laboratory program to USOE, to the Board of Directors, State Departments of Education, to the congressional delegation from the region, and to other audiences within the educational community. His responsibilities also include maintaining liaison with sources of nongovernmental funding, and with other Laboratories and R & D centers. Additionally, he conducts yearly performance reviews of all staff members.

Academic Background:

1958 San Diego State College, Major in Elementary Education, Minor in English, A.B.

1962 San Diego State College, Elementary School Administration: Thesis on "Teachers Attitudes Toward Curriculum Development", M.A.

1966 Stanford University, Degree in General School Administration "Correlates of Educational Expenditures in Medium-Sized School Districts", Ed.D.

Professional Experience:

July 1, 1968- Executive Director, Upper Midwest Regional Educational Laboratory, Minneapolis, Minnesota.

Chief executive officer of a non-profit corporation. This corporation is managed by a 24-member board of directors. Chief functions have been to recruit a very able staff representing many different disciplines and then to provide them with an environment in which they can use their skills. Deals with representatives fron federal, state and local school districts. Continue to pursue major professional interests in organizational theory, administration of research projects and educational finance.

Laboratory policy and procedures:

Communicating lab program to USOE, Board of Directors, State Department of Education, Congressional delegation, and other audiences within educational community.

Liaison with sources of private nongovernmental funding.

All of recommendations of LCC in determining Laboratory policies.

Yearly performance review of all staff members.

Liaison with other Labs and R & D Centers.

May 15, 1966-June 1968 Research Director, State Committee on Public Education, Berkeley, California.

Plan, organize, and direct education projects of major scope; recommend and develop methods of procedures for the collection and use of required project data; define the variables and limits of the project and evaluate basic factors influencing variations in the data; direct the analysis of data qualitatively, using the methods of the appropriate field of specialization; arrange for the effective use of special consultants, ad hoc task force teams, and other advisory services; plan and arrange meetings of advisory committees; direct the preparation of and personally present progress reports to advisory committee; plan and provide leadership for regional meetings and workshops to disseminate pertinent information or to provide in-service training; provide liaison between project committees and interested persons and groups; select, train, and evaluate project staff; coordinate and schedule project staff efforts and presentation of material developed; represent project staff at meetings and conferences; keep abreast of current developments in this specific field.

September 1965-May 1966 Director Evaluation of the Impact of NDEA on California Education, California State Department of Education.

During this period I developed and administered a questionnaire designed to discover what impact the National Defense Education Act had on California Education. In the course of this study I traveled widely over the state, meeting with representatives of the 54 county departments of education that distributed the questionnaire. I also organized and chaired a one week conference that coded the open ended response to the questionnaire and cooperated in the final writing of the report.

June 1964- June 1966 — Research Assistant, Stanford University, School of Education, Stanford, California.

Served as project assistant to Professor James in this study of school finance. My major responsibility was to gather data on the City of Milwaukee. This study had two purposes; the first was to refine further the inductively-derived rationale for the study of school finance in which Professor James has been interested for a decade, the second was to apply the rationale to school systems in the great cities of the United States.

September 1963- June 1964 — Supervisor of Intern Teachers, San Diego Unified School District, San Diego, California.

I had the responsibility of supervising five intern teachers. These teachers had no experience and it was my task to train them as elementary school teachers for the San Diego school system. I worked cooperatively with San Diego State College in this task.

February 1964- June 1964 — Instructor, San Diego State College Extension Division.

Taught a class of thirty-five teachers on the topic "Modern Mathematics in the Elementary School".

September 1958- September 1963 — Teacher and Master Teacher, San Diego Unified School District, San Diego, California.

I taught all subjects in a self-contained classroom in grades five and six and supervised student teachers. During two of these years I taught classes with children whose I.Q.'s exceed 148 on a Stanford-Benet Intelligence Test. During the last year I also served as the substitute principal for the school.

Publications:

1. The Impact in California of NDEA: Titles III, V and VIII.
2. Correlates of Educational Expenditures in Medium-Sized School Districts.
3. Correlates of Educational Expenditures in Medium-Sized School Districts (abstract to be published by N.E.A. as one of the papers given an award by 10th National Conference of School Finance).
4. Off With the Handcuffs; The State Committee on Public Education's plan for freeing schools. (Presented at 1967 California Association for School Administrators Conference).

5. Abstract of Citizens for 21st Century (submitted to American Educational Research Association).

6. Evans, David N. and Potter, Conrad H. "Correlates of Educational Expenditures in Medium-Sized School Districts; Educational Expenditures in Large City School Districts, 1950-60." The Challenge of Change in School Finance, Washington, D. C., National Education Association, 1967, pp. 204-210.

7. Guthrie, James W., Penfield, Douglas and Evans, David N. "Geographic Distribution of Teaching Talent in California." Citizens for the 21st Century - Long-Range Considerations for California Elementary and Secondary Education, Sacramento, California, California State Committee on Public Education, 1969, pp. 203-222.

8. Evans, David N. "Teacher Preparation, a Special Concern." Citizens for the 21st Century - Long-Range Considerations for California Elementary and Secondary Education, Sacramento, California, California State Committee on Public Education, 1969, pp. 223-229.

9. Guthrie, James W., Penfield, Douglas A. and Evans, David N. "Geographic Distribution of Teaching Talent." American Education Research Journal, 6(4), pp. 645-659, November 1969.

10. Ammentorp, William M., Daley, Marvin F. and Evans, David N. "Pre-requisites for Systems Analysis in Education." Behaviorally Engineered Environments - Staff Papers for AERA Symposium, 1970, Minneapolis, Minnesota, Upper Midwest Regional Educational Laboratory, 1970, pp. 41-42.

11. Honetschlager, Dean A. and Evans, David N. "Establishing Relationships for Research-Based Development in Schools." Behaviorally Engineered Environments - Staff Papers for AERA Symposium, 1970, Minneapolis, Minnesota, Upper Midwest Regional Educational Laboratory, 1970, pp. 45-47.

12. Evans, David N. "Directions for the Seventies." Needs of Elementary and Secondary Education for the Seventies, Washington, D. C., General Subcommittee on Education of the Committee on Education and Labor, House of Representatives Ninety-First Congress, 1970, pp. 183-186.

13. Evans, David N. and Johnson, I. T. The Impact in California of NDEA Titles III, V, VIII. Sacramento, California, California State Department of Education, 1967.

Professional Affiliations:

American Association of School Administrators
American Educational Research Association
National Education Association
Phi Delta Kappa

VITA

Jon R. Morris, Program Coordinator, UMREL

Function:

Mr. Morris' responsibilities are in two major areas; (a) designing and carrying out research on conditions in the UMREL school environment with a goal of validating existing educational designs and suggesting new ones and (b) advising graduate students both in programs of study and in dissertation research related to the Laboratory program.

Academic Background:

1963	B.S., Major-Mathematics, Physics Illinois Wesleyan University Bloomington, Illinois
1965	M.A., Mathematics University of Denver
1970	Ph.D., Major-Experimental Design, Statistics, Computer Applications in the Behavioral Sciences, University of Colorado

Professional Experience:

1964-65	Instructor, Part-time, Temple Buell College, Denver
1965-67	Programmer-Modeler, McDonnell Automation Company, St. Louis. System design, programming, and debugging of utility routines for the Gemini A trainer software system. Analyzed, designed, and implemented the aerodynamic data package for a commercial jet pilot trainer. Did considerable anaylsis of the post simulation data to verify the accuracy of the simulation technique.
1966-67	Instructor, Part-time, University of Missouri, St. Louis Instructed two classes of Introduction to Digital Programming.
1967-68	Director of Data Processing and Instructor of Mathematics, Wisconsin State University, Stevens Point. Duties were preparation of operational philosophy of the department, conduct a program of information and assistance to various areas of the university such as academic affairs, business affairs, library and student affairs as to the potential of the available equipment. Develop and maintain useful data systems for all areas of the university. Preparation and execution of the department budget. Supervision of personnel consisting of one programmer and three data preparation persons. Establish priority of use schedules. Furnish programming support as required by faculty members.

Professional Experience Continued:

Instruct one class in computer programming. Developed teletype interlink with University of Wisconsin Computer Center at Madison.

1968- Internship experience through the Laboratory of Educational Research, University of Colorado.

(1) Colorado State Department of Education Urban Planning Division. Implementation of SCANPED (System for Comparative Analyses of Programs for Educational Development) on the computer at University of Colorado. Consulted on appropriate regression techniques for projection, conversion of the program from a foreign machine and some debugging of the program.

(2) Applications of the following data analysis techniques: Regression analysis, ANOVA, MANOVA, MANCOVA, discriminate function analysis, factor analysis, multivariate analysis of repeated measures, and canonical correlation analysis in actual experimental setting, including preparation for computer analysis, interpretation of results, and writing of final report. As a laboratory fellow a considerable amount of time is given to consultation on experimental design to clients (including faculty and students) from various departments of the university.

(3) Consultant for computer usage and data analysis of Compensatory Education Act (Title I) evaluation.

(4) Design and programing of two interactive mode programs for the C.D.C. 6400 Scope 282 graphics system. Programs are The Tape Editor and The University Planner.

1968- Graduate Assistant, WICHE-MIS. Assignments have included: Conducting a review of the literature on Student Flow Models (Student flows as related to resource requirements predictions for higher education). Preparation of a report outlining the aims of the WICHE Student Flow Model including a schema for evaluating various prediction models using as test data historical data from the University of Colorado. Preparation of data tapes including six years of crossover data (by major by student) which can be matched with student entrance data, diploma card data, and instructional characteristics files. These tapes will be used for model evaluation. Preparation of crossover matrices, matched with characteristics data to be analyzed for structural components of student behavior (see research papers in progress).

Professional Affiliations:

American Educational Research Association

National Council on Measurement in Education

Association for Computing Machinery

Subcontracts and Letters of Commitment

The budget summary on page 14 is derived from the following documents. Each expresses the subcontractor's intent to attain certain project objectives. The reader's attention is drawn to:

a) Objectives to be attained.

b) Dollar amounts by project year.

c) Staff qualifications.

d) Letters of commitment.

Subcontractor #1: Educational Research and Development Council

The Educational Research and Development Council will provide administrative and coordination services to the Consortium. It will be the administrative agency for involvement of the Department of Psychological Foundations and the Division of Educational Administration of the University of Minnesota. The detailed budgets appended to the subcontracts of these participants will be managed by ERDC.

A person from the ERDC staff will be assigned to the project and will assure coordination of work done by University staff. ERDC will also provide office space and secretarial services as necessary for contract administration.

Subcontract Budget:

ERDC	6/71	6/72	6/73	6/74
Project administration (¼FTE)	$1,000	$4,000	$4,200	$4,400
Secretarial (½FTE)	$2,500	$2,250	$2,250	$2,250
Total	$3,500	$6,250	$6,450	$6,650

221 HEALTH SERVICE BLDG.
UNIVERSITY OF MINNESOTA
ST. PAUL, MINNESOTA 55101

EDUCATIONAL RESEARCH and DEVELOPMENT COUNCIL
of the Twin Cities Metropolitan Area, Inc.

COLLEGE OF EDUCATION
UNIVERSITY OF MINNESOTA
MINNEAPOLIS, MINNESOTA 55455

AREA CODE: 612
373-4872
373-4860

Active Members:

Anoka
Belle Plaine
Bloomington
Brooklyn Center
Burnsville
Centennial
Chaska
Columbia Heights
Eden Prairie
Edina
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Forest Lake
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Golden Valley
Hopkins
Inver Grove-Pine Bend
~~Jordan~~
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Osseo
Prior Lake
Richfield
Robbinsdale
Rosemount
Roseville
St. Anthony
St. Francis
St. Louis Park
St. Paul
Shakopee
Spring Lake Park
Stillwater
Waconia
Watertown
Wayzata
West St. Paul
White Bear Lake

Associate Members:

~~Archdiocese of Minneapolis/St. Paul~~
Delano Public Schools
Rockford Public Schools

December 8, 1970

COPY

Dr. John Egermeier, Acting Chief
Research Training Branch
National Center for Education,
Research and Evaluation
U. S. Office of Education
400 Maryland Avenue S. W.
Washington, D. C. 20202

Dear Dr. Egermeier:

The Educational Research and Development Council of the Twin Cities Metropolitan Area represents 44 school districts in the seven county Minneapolis-St. Paul metropolitan area. This consortium of schools is extremely interested in, and wholeheartedly supports, the proposal to initiate a Midwest Educational Training Center to train educational developers and evaluators.

Many problems and needs exist on the educational scene today, but paramount among problems and needs is the need to prepare people in the area of program development and evaluation. To accomplish this, a carefully designed program of inservice training is needed to train such personnel.

The Board of Directors of the Educational Research and Development Council of the Twin Cities Metropolitan Area enthusiastically endorses the aforementioned training project and would willingly assume a sub or prime contract to forward the effort.

Most sincerely yours,

Thomas F. Stark
Executive Secretary

40

TFS/rrr

cc: Wayne W. Welch

Subcontractor #2: Division of Educational Administration
University of Minnesota

The Division of Educational Administration proposes to design and test an instructional management system for the Consortium. This system will meet the objectives outlined for individualized instruction in Design Document III, namely,

"1. The goals of learning are specified in terms of observable behavior and the conditions under which this behavior is to be exercised.

2. Diagnosis is made of the initial capabilities with which the learner begins a particular course of instruction. The capabilities that are assessed are those relevant to the forthcoming instruction.

3. Educational alternatives adaptive to the initial profile of the student are presented to him. The student selects or is assigned one of these alternatives.

4. Student performance is monitored and continuously assessed as the student proceeds to learn.

5. Instruction proceeds as a function of the relationship between measures of student performance, available instructional alternatives and criteria of competence.

6. As instruction proceeds, data is generated for monitoring and improving the instructional system.

7. Knowledge and skills available to trainees are modular in nature and can be aggregated to meet demands of particular employee roles.

8. Follow-up data on trainee performance on the job is gathered and used to revise and update training program content.

9. Students may enter and leave the program at any point. Enter/leave decisions are controlled by trainee characteristics and desired skill/knowledge outcomes.

10. Certification and/or credit is an optional feature of the program. Decision rules are available to insure wide interpretation of program content across receiving organizations.

11. Student performance - both during and subsequent to training - constitutes the data source for program evaluation. It also produces a baseline of performance against which instructional innovations can be judged."

Divisional staff assigned to the project will design and test a system to meet the above objectives. The outcomes of their work will be those outlined on page 3 of the Consortium proposal:

a) Data gathering instruments and procedures

b) Files for storing information related to instruction process, training content and student behavior.

c) Procedures and/or computer software for system implementation.

d) Design and analyses of reinforcement practices used during training.

e) Provisions for analysis of system outcomes and costs.

To this listing will be added reports of system features and evaluation of implementation testing of the management system.

Budget:

	6/71	6/72	6/73	6/74
Staff:				
Assoc. Prof. (½FTE)	$4,000	8,000	9,000	10,000
V. Hendrix (½FTE)	$5,000	10,000	11,000	12,000
Secretarial (1 FTE)	$2,500	5,000	6,000	6,000
Materials and Computer Time	____	2,000	4,000	4,000
Total	$11,500	25,000	30,000	32,000

UNIVERSITY OF *Minnesota*

DIVISION OF EDUCATIONAL ADMINISTRATION
203 BURTON HALL · MINNEAPOLIS, MINNESOTA 55455

December 1, 1970

Mr. John Egermeier
Acting Chief
Research Training Branch
U. S. Office of Education
400 Marylind Avenue S.W.
Room 3040
Washington, D. C. 20202

Dear Mr. Egermeier:

The Division of Educational Administration is pleased to offer its assurance that the attached subcontract will receive high priority in Division efforts. Staff members named in the contract will be proportionately relieved of Divisional responsibilities and given the complete support of Division staff as they carry out this important work.

The Division's interest in new designs for instruction and special training to meet educational needs is one of long standing. I hope that this project will be an important step in Division effort to serve the educational needs of the region.

Sincerely,

Clifford Hooker

Clifford F. Hooker
Chairman

CFH:hs

VITA

Vernon L. Hendrix

Present Position:

Professor, Division of Educational Administration, College of Education, University of Minnesota.

Recently - 1967-69:

Assistant to the Chancellor for Research and Training, Dallas County Junior College District.

Education:

B.M. from Texas Christian University, Music - History - Composition.

M.M. from University of Texas, Musicology.

1962 Ph.D., from University of Texas, in Junior College Administration.

Special Interests:

Institutional Research
Administrative Decision-Making
Computer Usage in Administration
Systems Analysis in Educational Institutions

Teaching:

Junior College Administration and Institutional Research, University of California, Los Angeles.

Humanities, Music History and Theory, Pensacola Junior College, Pensacola, Florida.

Administration:

Assistant Dean, College of Fine Arts, University of Texas.

Member:

American Association of Junior Colleges
Association for Higher Education
American Educational Research Association
Association for Institutional Research
Association for Computing Machinery

Current Activities:

Teaching and supervising research in the area of administration -- Higher Education.

Papers and Reports:

1. Environmental Measurements in Educational Institutions, National Conference of Professors of Educational Administration, New York University, August, 1964.

2. Systematized Institutional Research, National Conference of Professors of Educational Administration, New York University, August, 1964.

3. Population Age Distributions and Public Education Expenditures, (with Marvin C. Alken) American Educational Research Association, New York, February, 1967.

4. Research Opportunities in Comprehensive Public Junior Colleges: Inter- and Intra-College Organizational Problems, American Educational Research Association, New York, February, 1967.

5. Community Characteristics Related to Perceived Student Satisfaction and Achievement in 100 Public Junior Colleges. American Educational Research Association, Los Angeles, February, 1969.

6. Environmental Determinants of Successful Occupational Training in Public Junior Colleges, American Education Research Association, Minneapolis, March, 1970. (Partial report of HRD-117-65).

7. College Environments and Student Change Mechanism in Public Junior Colleges, American Personnel and Guidance Association, New Orleans, March, 1970. (Partial report of HRD-117-65).

Publications:

1. Manual for the Preparation of Dissertation Research Proposals, Los Angeles: Junior College Leadership Program, University of California, 1963.

2. "Academic Rank: Mostly Peril?" Junior College Journal, 34, #4:28-30, December, 1963.

3. "An Iterative Solution of the Normal Probability Integral," Educational and Psychological Measurement, 24, #3:663-667, Fall, 1964.

4. "Emerging Dimensions in Junior College Environments," Institutional Research in the Junior College, A Report of a Conference Sponsored by the University of California, Los Angeles, Junior College Leadership Program and the Southern California Junior College Institutional Research Group, Los Angeles: School of Education, U.C.L.A., September, 1964, pp. 21-28.

5. "Rationale and Potential for Environmental Measurement in the Junior College," Institutional Research in the Junior College, A Report of a Conference Sponsored by the University of California, Los Angeles, Junior College Leadership Program and the Southern California Junior College Institutional Research Group, Los Angeles: School of Education. U.C.L.A., September, 1964, pp. 1-16.

6. "Relationships Between Personnel Policies and Faculty Life-Record Data in Public Junior Colleges," California Journal of Educational Research, 15, #3:150-157, 160, May, 1964.

7. "Relationships Between Personnel Policies and Faculty Personality Characteristics," California Journal of Educational Research, 15, #1:34-43, January, 1964.

8. "Academic Personnel Policies and Student Environmental Perceptions," Educational Administration Quarterly, 1, #1:32-41, Winter, 1965.

9. "Academic Rank Revisited," Junior College Journal, 35, #5:24-28, February, 1965.

10. "Administrative Research in Educational Systems," in A Conceptual Framework for Institutional Research, Proceedings of Fourth Annual National Institutional Research Forum, Washington State University, Pullman, Washington, 1965 (Conference at University of Minnesota) pp. 17-22.

11. "Institutional Research in Junior Colleges," in A Conceptual Framework for Institutional Research, Proceedings of Fourth Annual National Institutional Research Forum, Washington State University, Pullman, Washington, 1965. (Conference at University of Minnesota), pp. 67-82.

12. "The Blacky Test: Another Approach to Factor Analytic Validity," (with Sandra Robinson) Journal of Projective Techniques.

13. "Environmental Press Preferences of Students," in Research on Academic Input, Proceedings of Sixth Annual Forum of the Association for Institutional Research, State University of New York College at Cortland, Cortland, New York, 1966. (Conference in Boston), pp. 189-193.

14. "Input-Output Relationships," in Financing Junior Colleges in California, (with Marvin C. Alken) Sacramento: California State Department of Education, 1966, pp. 34-40.

15. Functional Relationships of Junior Colleges Environments and Selected Characteristics of Faculties, Students, the Administration and the Community, Minneapolis: University of Minnesota (Final Report of Cooperative Research Project #2849), 1967.

16. Input-Output Relationships in a Sample of California Public Junior Colleges, (with Marvin C. Alken) Los Angeles: Center for the Study of Evaluation in Instructional Programs, University of California, 1967.

17. "Factor Dimensions and Reliability of the Work Values Inventory," (with Donald E. Super) Vocational Guidance Quarterly, June, 1968, pp. 269-274.

18. "A Professional Library for Junior Colleges," (with Kenneth Oosting) Minneapolis: University of Minnesota, 1967. 20 pp.

19. "Junior College Environment Scales," in Institutional Research and Academic Outcomes, Proceedings of the Eighth Annual Forum on Institutional Research, University of Georgia: Atlanta, 1968. (Conference in San Francisco), pp. 61-72.

Reviews:

1. Schick, Thomas, "Disk File Sorting." Comm. ACM, 6,6 (June, 1963), 330-331.

2. Berkshire, James R., "Human Quality Control." Proceedings 4th IBM Medical Symposium., October, 1962, Endicott, N. Y., 355-370.

3. Bushnell, Donald D., "The Role of the Computer in Future Instructional Systems." AV Communication Review, Supplement 7 (March - April, 1963), 70p.

4. Egbert, Robert L., "The Computer in Education: Malefactor or Benefactor," Proceedings AFIPS 1963 Fall Joint Computer Conference, Las Vegas, Nev., November 1963, 619-630. Spartan Books, Baltimore, Maryland.

5. Kish, Leslie, "Survey Sampling," John Wiley & Sons, New York, 1965, 643 p.

6. Kuehn, Alfred A.' and Weiss, Doyle, L., "Marketing Analysis Training Exercise," Behavioral Science, 10, 1 (Jan. 1965), 51-67.

7. Personnel Reports -- a CBS Special," Business Automation, 12, 3 (March 1965), 51-53.

8. "Using Programs to Teach Programming Skills," Business Automation, 11, 7 (July 1964), 32-35.

9. Boullet, L., "An Example of Computer Use for Mass Processing, Aiming at Maximum Profitability." In Economics of Automatic Data Processing, 259-267.

10. Braudo, M., "Automation with a Provident Fund Employing An ADP Service Center." In Economics of Automatic Data Processing, 248-258.

11. Edwards, Ward, "Optimal Strategies for Seeking Information: Models for Statistics, Choice Reaction Times, and Human Information Processing," Journal Mathematical Psychology, 2, 2 (July 1965), 312-329.

12. Greene, R. H., "Adapting Audit Techniques Under Automation," Auditgram, 41, 11 (November 1965), 12-14.

13. Hiltz, F. F., "Computer Correlation Analysis of Intracellular Neuronal Responses." In Proceedings AFIPS 1965 Fall Joint Computer Conference, Part I, 567-581.

14. Porter, Than R., "Parameter Reading Routine for Statistical Lib Library Programs." Presented at Metropolitan New York ACM Symposium, New York City, March 1966. University Computer Center, New York University, 15 p.

15. Sprowls, R. C., "Economic Analysis of Teleprocessing Service at the Western Data Processing Center." Economics of Automatic Data Processing, 268-276.

16. Thibert, R., "Bookkeeping by Computer, Using an Optical Reading Device." Economics of Automatic Data Processing, 277-281.

17. Zucker, M. S., "LOCS: An EDP Machine Logic and Control Simulator." IEEE Trans., Ec-14, 3 (June 1965), 403-416.

18. Ball, Geoffrey H.; and Hall, David, J., "A Clustering Technique for Summarizing Multivariate Data." Behavioral Science, 12, 2 (March 1967), 153-155.

19. Celio, Rinaldo Baldini, "A Study of the Cyclic Use of the Same Central Unit by Many Customers." ICC Bulletin, 6, 1 (January-March 1967), 27-38.

20. "Description of Systems Used for Data Transmission (an ASA Tutorial)." Comm. ACM, 9, 10 (October 1966), 764-770.

21. Maloney, Clifford J., "Multinomial Acceptance Sampling." Proceedings ACM 21st National Conference, 445-452.

22. Menkhaus, Edward J., "Film Stars in Action-Packed File System." Business Automation, 14, 4 (April 1967), 40-44.

23. Shapiro, S., "A Technique to Control Waiting Time in a Queue." IBM Systems Journal, 4, 1 (1965), 53-57.

24. Wendler, Charles Clifford, "Total Systems--Characteristics and Implementation." Systems and Procedures Association, Cleveland, Ohio, 1966, 123 pp.

Subcontractor #3: The Department of Psychological Foundations

Components to be furnished:

I. A listing of the responsibilities of the department.

II. A time line of the activities

III. Summary table of the evaluation training planned.

IV. Budget estimate and summary.

V. List of identified evaluation hierarchies and estimate of availability of modules. The components of these modules are keyed to the list of objectives in the conceptual papers.

VI. A sample training module.

I. The Department of Psychological Foundations of the College of Education, University of Minnesota agrees to the following responsibilities as a subcontractor for the Midwest Educational Training Center.

1. Develop a set of evaluation training modules to achieve the instructional objectives identified in the area of evaluation. The modules will be developed for each of the 12 levels of evaluation skills identified in the conceptual paper by Welch found in Design Document II. The hierarchy of the evaluation skills is reproduced in Part V of this agreement, together with an example of the form and format of a training module. (See Part VI). Current plans call for the development of six of the modules during the first year of the implementation stage, and the remaining six to be developed during the following year. (See schedule in Part V).

2. Provide training and/or retraining in the area of evaluation for two post-doctoral fellows for each of three year of the implementation stage. The training will consist partially of intern or practicum experience in the development of the training modules, collaboration with staff currently working on evaluation problems, and participation in the actual training experience to be provided to others.

3. Provide yearly training opportunities for ten graduate fellows in the area of research and evaluation. Special emphasis will be given to practicum experience in development, training, and actual evaluation experiences. The role expectation for those students is an evaluation specialist. This is listed as Role B in Figure 2.

4. Provide training for 20 evaluation specialists currently functioning in educational institutions. The initial training focus will be on pilot testing and researching the training modules. In subsequent years, the focus will shift toward increased training opportunities. Anticipated numbers of specialists to be trained is 40 per year.

5. Train and/or retrain a total of 100 classroom teachers in the set of skills identified essential for their role. The levels of objectives considered here are specified in Figure 1.

6. Train 20 school administrators or other central office personnel (for example, state department, junior college, large school districts) in the identified research and evaluation skills.

(Note) II. A time line of activity planned for the department is shown in Figure 1. The period shown extends to September 1972. We expect that the cycle will be repeated during subsequent years.

Notice that the initial emphasis is on development but gradually shifting toward more training.

(Note) III. An overall summary of the evaluation training planned, the target role to be filled, and estimated numbers of trainees is shown in Figure 2.

FIGURE 1

II. TIMELINE OF PACKAGE DEVELOPMENT AND INITIAL TRAINING

(Responsibilities of Psychological Foundations Department, University of Minnesota)

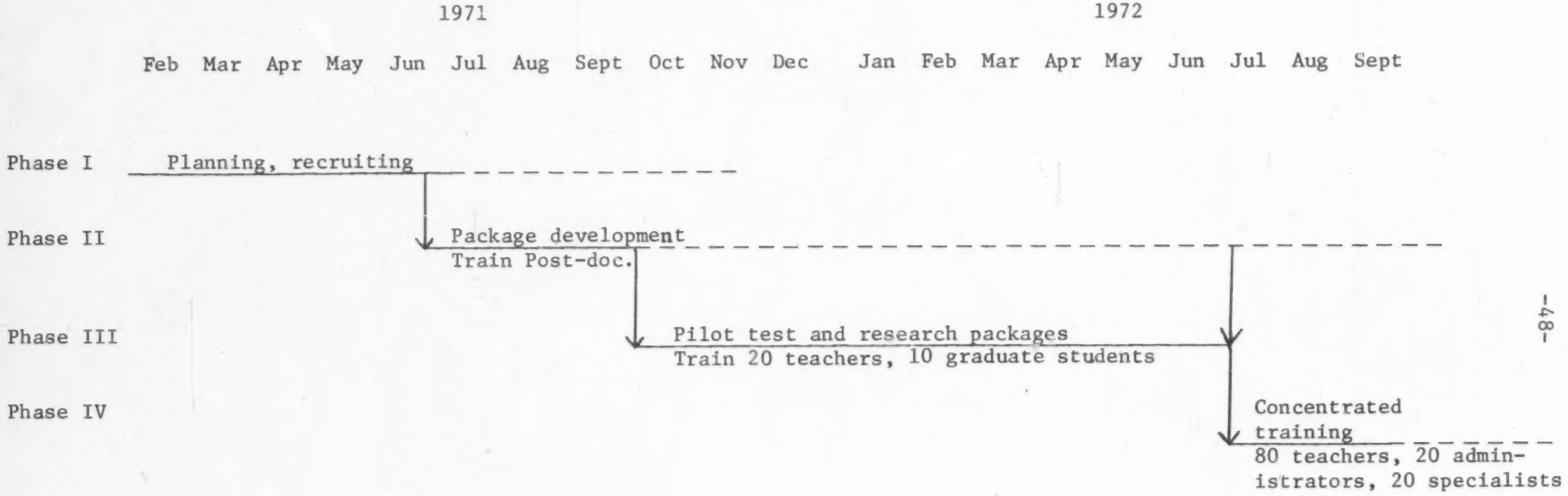

FIGURE 2

III. SUMMARY TABLE OF EVALUATION TRAINING

Objective Levels Required	Evaluation Role	Example	Planned Training Experience	Approximate Numbers
I, II, ... X	A. Theoretician	University professor	Postgraduate Graduate students	2/year 10/year
II, III, ... X	B. Professional	Evaluation specialist State Department	Graduate students Workshops, institutes	20/year
VI, VII, ... XI	C. Semiprofessional	Administrator Teacher	Inservice Institutes	120/year
XI, XII	D. Paraprofessional	Staff, Secretary	None planned at present	None

IV. BUDGET SUMMARY

February - June 30, 1971

Salaries		6,500
Stipends		(See prime contractor budget)
Staff		3,000
Support		2,000
Materials		5,000
	Subtotal	16,500

July 1, 1971 - June 30, 1972

Salaries		34,000
Stipends		(See prime contractor budget)
Staff		10,000
Support		10,000
Materials		10,000
	Subtotal	64,000

July 1, 1972 - June 30, 1973

Salaries		43,000
Staff		14,000
Support		10,000
Clerical		5,000
	Subtotal	72,000

July 1, 1973 - June 30, 1974

Salaries		45,000
Staff		14,000
Support		5,000
Clerical		5,000
	Subtotal	69,000

ITEMIZED BUDGET FOR FIRST TWO YEARS

Specific commitments and estimated costs

Feb. 18 - June 30, 1971 (4 months)	Rhetts (c) Johnson (¼) Welch (¼) $1500 through UMREL	Planning, recruiting	$ 2,000 2,000 $ 4,000	Travel Materials Misc. Secretary	$ 2,000 5,000 2,000 1,000
					$ 10,000
June 30 - Sept. 30, 1971 (3 months)	Rhetts (½) Johnson (c) Welch ¼ (c) Post-doc. (2) Asst. Prof. (1) Terwilliger (½)	Develop training packages	$ 3,000 2,000 2,000 8,000* 4,000 $ 19,000	Secretary Materials Misc.	$ 2,000 5,000 5,000 $ 12,000
Sept. 30 - June 30, 1972 (9 months)	Welch (¼) Johnson (¼) Rhetts (¼) Asst. Prof. (1) Post-doc. (2) Grad. Students (4)	Pilot training development	$ 4,000 4,000 3,000 12,000 24,000 12,000 $ 59,000	Materials Stipends (20) Staff (2) Misc.	$ 5,000 5,000* 8,000 5,000 $ 23,000
		Subtotals	$ 82,000		$ 45,000
June 30 - Sept. 30, 1972 (3 months)	Post-doc. (2) Professor (4) Grad. Students (4)	Training	$ 8,000* 20,000 3,000* $ 23,000	Stipends (120) Staff (2) Misc.	$ 30,000 6,000 5,000 $ 41,000
		TOTAL	$ 105,000		$ 86,000

* Stipends to UMREL as prime contractor.

V. EVALUATION TRAINING MODULES TO BE DEVELOPED

(Department of Psychological Foundations, University of Minnesota)

LEVEL	MODULE DESCRIPTION	DEVELOPMENT DATE	COMMENTS
I	THEORY & RESEARCH	72-73	Will emphasize practicum experience.
II	DESIGN	72-73	Primarily practicum oriented.
III	AUDIT	72-73	
IV	INTERPRETATION	S72	
V	MANAGEMENT	S72	Will tie-in to Training Project management system.
VI	COMMUNICATION	S72	
VII	ANALYSIS	71-72	Modules are currently being developed in department for statistics course.
VIII	DEVELOPMENT	71-72	Measurement courses presently developing useable modules.
IX	SELECTION	71-72	Same as above.
X	BEHAVIORAL OBJECTIVES	S71	Sample module attached. Also there are several on-shelf components.
XI	IMPLEMENTATION	S71	
XII	PROCESSING	S71	Several components on-shelf at CDC. Will be primarily a selection process.

TABLE 1

PROGRAM EVALUATION

HIERARCHY OF EDUCATIONAL OBJECTIVES

Level	
I.	Develops theory and conducts research on the evaluation process.
II.	Designs specific evaluation studies.
III.	Conducts audits of planned and ongoing evaluations.
IV.	Interprets evaluation results.
V.	Manages or administers an evaluation study.
VI.	Communicates to decision makers appropriate information.
VII.	Analyzes and summarizes the meaning of data.
VIII.	Develops data-gathering techniques.
IX.	Selects appropriate data-gathering techniques for specific evaluation problems.
X.	Writes and utilizes behavioral objectives.
XI.	Administers data-gathering process.
XII.	Processes data including key punching, test scoring, etc.

Part VI

MODULE TITLE: State Behavioral Objectives and Self-Management (of behavior) by Objectives

John E. Rhetts
Department of Psychological
Foundations of Education
University of Minnesota

This module (instructional unit) contains six objectives. Each is accompanied by a short statement of a rationale why the objective is relevant, a set of learning activities, and a suggestion of performance criteria by which the learner may gauge his attainment of the objectives.

It is strongly recommended that the reader should read through the entire module, all six objectives, before beginning work on the specific learning activities. This will give the learner a picture of the longer-range objectives or goals of this instructional unit than is contained in the specific learner objectives.

Overview

This module can be assigned to a simple learner or a group of learners. One person can work on this module with only occasional contact with instructional staff. Or several individuals can work independently or collectively at their own rate and then meet in task-oriented small groups at specified points (e.g., Objective Four).

One instructor/trainer will be required for each (approximately) thirty learners.

This module should be able to be accomplished in 14-17 hours of learner work plus 4-5 hours of instructional staff time.

OBJECTIVE ONE: The learner will be able to state objectives for learning in clear and behaviorally-specific terms.

RATIONALE: The concept of stating behavioral objectives for students' learning is an important addition to the collection of tools available to the educator. A behavioral objective tells the reader or learner what he will be able to do (perform) after having completed related instructional or learning activities. Object One, above, is an example of such a behavioral objective; it states what you will be able to do or perform--in short, what your behavioral repertoire will contain--after you finish the instructional unit or module.

Behavioral objectives serve two major functions in the educational process. First, they serve as organizers and as guidelines for the educator as he works in each of two very important roles: (a) that of the developer or selector of instructional materials and (b) as the evaluator of such materials. Second, behavioral objectives serve to communicate explicitly the goals of the instructional effort to others than the creators. Obvious examples of relevant others would be: (a) students intending to learn from the instructional materials; (b) evaluators who wish to evaluate the success of the instructional effort; and (c) other educators who wish to know how their own instructional endeavors mesh with another, e.g., in planning sequences of courses or units the questions of pre-requisite skills must be attended to.

The emphasis in the phrase "behavioral objectives" is on the first word, because experience has shown that to the extent that instructional objectives can be expressed in terms of the behavior of the learner several benefits accrue. First, the focus on learner behavior provides the instructional materials developer with a terminal description to focus what his intermediate materials call for the learner to do; in short, the developer is guided by a statement in behavioral terms while he is selecting and sequencing learning activities (behaviors) designed to facilitate the learner's accomplishment of the specific terminal behavior.

Second, the process of stating instructional objectives in behavioral terms directly facilitates the process of evaluation. The evaluation question becomes, "Can the student perform the specified behavior or not?" Since the desired or criterion behavior is defined in the objective itself, the question of testing then follows immediately from the objective. Futhermore, much evaluation is concerned with establishing the relative merits of different instructional materials or systems. But in fact many such actual evaluation studies end up

being faced with the problem of trying to compare apples and bananas: two or more alternative instructional units often have different objectives, especially when the objectives of such units are implicit or covert rather than explicit and overt. But, with statements of intended objectives the evaluator can first insure that any two or more instructional units are addressing the same goals and then he can examine the question of whether the learners using any one unit have a higher rate of attainment of the related behavioral competencies.

Third, any learner undertaking to study a given instructional unit can easily find out why or to what end is is doing so--to the end of being able to perform or demonstrate the concrete behaviors specified in the objectives. This ability to find out not just what but also why he is doing the specified learning activities can in many cases serve to raise or maintain motivation of a learner. Certainly many students claim confusion about what is desired of them. And, indeed, there is no good reason for keeping "secret" from students the instructional objectives of learning activities they are called upon to do. In addition, in many cases the objectives may serve to develop an appropriate learning "set" which facilitates the cognitive and behavioral apprehension of the requisite terminal competencies.

Fourth, by means of objectives both learners and evaluators or monitors can know when the learner has engaged long enough in the learning activities. Learner and observer alike can know when the goal has been reached: when the learner can perform at criterion level the behavior specified in the stated objective.

Fifth, the problems of program revision, modification or change are facilitated when the overall effort is broken down into discrete behavioral components. The entirety or "flow" of an instructional system need not be disturbed to revise or substitute a single or small number of components. Conversely, if overall system objectives change, then individual instructional objectives and their related learning activities can be transformed as discrete building blocks to the new system or application based on the precise appropriateness of each.

LEARNING ACTIVITIES: Read and work through at least one of the following references. Each deals with the topic in a different way, and therefore some comments about selection and sequence follow.

Kibler, R. J., Barker, L. L., and Miles, D. T., Behavioral Objectives and Instruction, Boston, Allyn and Bacon, 1970.

This is the most comprehensive and sophisticated of the four, though not likely to be too esoteric.

McAshan, H. H., Writing Behavioral Objectives: a new approach, New York: Harper & Row, 1970.

This reference gives a bit less of the "big picture" then Kibler, et. al., and is a bit more like a cookbook, but nonetheless it is a good reference. It remains quite concrete throughout.

Mager, R. F., Preparing Instructional Objectives, Palo Alto, California: Fearon, 1962.

Mager's approach is a programmed format, but a good deal of general discussion is included. Not as concept- or topic-oriented as the others.

Gronlund, N. E., State Behavioral Objectives for Classroom Instruction, New York: Macmillan, 1970.

This is the only one of the four references lacking self-testing question. However, it is a good summary of the principles involved, and Appendices A and B can be quite useful if not slavishly used.

As you read these, anticipate that your objectives will be to be able to write objectives to guide your own learning, as well as to be able to prepare objectives for instructing other, i.e., designing and/or developing instructional units, teaching, or evaluating your own or others instructional efforts.

If the reader is somewhat familiar with this topic or knows that he learns will from comprehensive or sophisticated presentations, then he should begin with the Kibler, et. al. reference. This is probably the best all-around reference, and is not likely to be too esoteric for most readers. Then, either Mager or McAshan could be worked through if some further testing, solidifying or repetition is desired. These are more specific and "cookbook"-like then Kibler et. al., and therefore would be a good supplement.

If the reader likes to begin at the most basic, elemental or "nuts and bolts" level first, then Mager, Gronlund, or McAshan would be a good starting point. Then, as a summary or synthesizing piece, the Kibler et. al. would be appropriate.

PERFORMANCE CRITERIA: Each of the above references except Gronlund contains internal testing devices to insure mastery of the objectives. In addition, the next two objectives will reveal whether you can state appropriate behavioral objectives.

OBJECTIVE TWO: The learner will be able to state behaviorally-specific learning objectives for:

A) developing instructional materials--i.e., objectives which can serve to guide the development of instructional materials, including the following topics:
   a) who
   b) does what
   c) to produce what
   d) under what conditions
   e) to what criterion

B) communicating to other learners (i.e., his students) the intended outcomes of learning units and guiding their activities designed to accomplish the specified objectives.

OBJECTIVE THREE: The learner will be able to state behaviorally-specific objectives for his own learning from this instructional development and evaluation "course."

RATIONALE: Objectives Two and Three are in one sense the performance criteria for Objective One, as was indicated above. That is, can you apply the principles of stating behavioral objectives to two concrete learning domains, i.e., both your own learning (Objective Three) as well as that of others (Objective Two)? These two objectives provide a structured opportunity for you to practice and perfect the behavioral skills called for in Objective One.

Objective Three also serves two important functions by itself: (1) The objectives you specify for your own learning can serve as important input in individualizing your instruction re: this development and evaluation course; your own interests can explicitly be considered, and more data can be gathered about diagnosing your present skills and needs for specific prescribed learning experiences. (2) The exercise of specifying behavioral objectives for your own learning activities is the first step in acquiring the skills of self-management by objectives, which is an over-all objective of this development and evaluation "course."

LEARNING ACTIVITIES:

(1) Select an area of curriculum or instruction with which you are familiar. It would be well to confine the size of the area you choose to roughly the amount of material you would expect a student to be able to master in 10 days of average studying and classwork.

(2) Develop a set of behaviorally-specific objectives for guiding instructional materials development and/or selection, and sequencing for the area you chose in 1 above. The tables of contents in Kibler et. al., McAshan, and/or Gronlund should be helpful in referring you to discussions of particular problematic issues in executing this exercise. (Mager is not typically well-suited for this sort of reference.)

(3) Rewrite the list of planning or non-instructional objectives into a form appropriate for instructional objectives for a student to read and use.

(4) Develop a list of behavioral objectives for your own learning about instructional development and evaluation. No matter which reference(s) you consulted in Objective One, both topics were raised and discussed to some extent.

PERFORMANCE CRITERIA: Your actual performance will be evaluated under Objective Four, but each of the objectives in the lists developed above should be clearly stated in behavioral terms and be specified to the appropriate learning domain (other's behavior vs. your own). Gronlund has a short, concise list of specific criteria you might wish to check your objectives against prior to moving on to Objective Four.

OBJECTIVE FOUR: The learner will meet together with an instructor, and any other learners who are also ready for this objective at the same time, to discuss the prepared list(s) of objectives. The discussion will focus on evaluating the objectives in terms of:

A) their clarity and behavioral specificity (i.e., whether an objective reader can understand the written statements and can readily infer what the writer would in fact do).

B) their appropriateness and priority for focusing the writer's learning during the period of this "course."

RATIONALE: This objective is designed to provide the learner with some external feedback concerning his work to date. In addition, if at all possible this feedback will be effected in a small group context. Cooperative efforts among group members can be extremely facilitative of learning, in that the chances are good that each person can profit from the comments and perspective of others in clarifying each group member's objectives. This is itself a learning experience for all. Also, the task orientation can in turn serve to initiate and facilitate further interactions among members of the group, thus developing and/or reinforcing group member/s interpersonal communications skills.

LEARNING ACTIVITIES: Bring your lists of objectives and meet with the instructor (plus any other learners who are also ready) to discuss and evaluate your objectives. You can anticipate that the instructor will make suggestions about necessary and/or appropriate additional objectives for your activity as will revisions in objectives you have stated yourself.

PERFORMANCE CRITERIA: You will subsequently produce amended sets or lists of objectives, incorporating necessary and appropriate revisions, additions, and deletions to your initial lists of objectives. This "second-generation" document will be the input for Objective Five.

OBJECTIVE FIVE: Given a set of clear, relevant, behaviorally specific learning objectives, the learner will be able to identify and define more than one alternative (learning) activity designed to accomplish each of the objectives.

RATIONALE: This objective moves one substantially closer to knowing what concretely to go ahead and do or perform. But rather than just implementing an (or the first) idea that occurs to you, it makes good sense to construe several alternatives and then select carefully on the basis of probable payoff which one will actually be pursued. So, at this stage the objective is to devise plausible alternative activities by which one could accomplish the objectives and among which you can then carefully and rationally choose.

LEARNING ACTIVITIES: Focusing your activity on ONLY those objectives for your own learning, develop written statements of AT LEAST THREE plausible, alternative activities for accomplishing each objective. The three activities should follow the statement of the objective, so that there is no confusion about which activities go with which objectives. You can anticipate that the instructor will inform you of some of the relevant learning packages which have been developed for this "course" (and which provide activities for achieving stated behavioral objectives or competencies).

PERFORMANCE CRITERIA: First, you will develop a list containing objectives and alternate activities together. Second, you will give consideration in developing this list that the activities you indicate are expressed clearly so that an objective reader can easily ascertain what you would be doing--what your behavior would be. Third, you will be prepared to discuss and evaluate with the instructor and any other group members your own list as well as lists of any others who may also attend.

OBJECTIVE SIX: The learner will be able to select for each of the objectives for his own behavior which of the possible alternative learning activities he will pursue in order to accomplish each of his objectives.

RATIONALE: This is the payoff for all the previous work. You decide what you will actually do in order to accomplish each of your objectives.

The task of setting behavioral objectives is admittedly a hollow, academic exercise without going out, and doing something with them. They can and should be uded to guide behavior. This whole process also will serve the important function of allowing the staff to monitor both what you are doing and how your activities relate to your objectives. With this sort of general framework you can proceed at your own pace and manage your own behavior without the necessity for staff constantly looking over your shoulder. On the other hand, when you wish or require personal consultation on some problem, there is an efficient mechanism for the staff to review where you are and want to go: and thus act to facilitate your learning.

LEARNING ACTIVITIES: Review with the instructor and any other available learners the list of your learning objectives. The goal and focus of this discussion should be four-fold:

(a) to clarify the written statements of alternative activities.

(b) to evaluate the probable success in attaining an objective by pursuing each of the indicated activities.

(c) to make recommendations to other learners about any especially promising alternatives which should be considered (i.e., additions to the lists).

(d) to make decisions about which activities will in fact be pursued by each person to accomplish each of his objectives.

PERFORMANCE CRITERIA: The final criterion will be whether you have developed a plan for your own learning activities which is clear, behaviorally specific and can serve at least the following functions:

(a) to guide your instructor in selecing and developing instructional materials for your learning.

(b) to guide you in managing your own learning activities.

The initial learning plan or program of studies may require revision at some point in time, even possible because you feel your objectives have changed. You should feel free to initiate consultation with your instructor at any time and then amend your list in writing.

UNIVERSITY OF *Minnesota*

PSYCHOLOGICAL FOUNDATIONS OF EDUCATION
330 BURTON HALL · MINNEAPOLIS, MINNESOTA 55455

December 11, 1970

Dr. John Egermeier
U. S. Office of Education

Dear Dr. Egermeier:

The purpose of this letter is to add support to the proposal for the Midwest Educational Training Center. Wayne Welch and the others members of our department have kept me informed about the proposal, and it appears very promising. You may be assured that the Department of Psychological Foundations will cooperate in all appropriate ways.

Yours truly,

Wells Hively II
Chairman, Psychological
Foundations of Education

WH:sd

VITA

Wayne Willard Welch

Education:

1956	B.S. Wisconsin State University
1960	M.S. University of Pennsylvania (Education)
1963	M.S. Purdue University (Physics)
1966	Ph. D. University of Wisconsin

Experience:

1956-59	Physics and mathematics teacher, Kaukauna High School, Kaukauna, Wisconsin
1960-63	Chairman of science department and physics teacher, Homestead High School, Mequon, Wisconsin
1965-69	Evaluation Coordinator, Harvard Project Physics
1965-69	Research Associate, Harvard Graduate School of Education
1969-70	Assistant Professor of Educational Psychology, University of Minnesota
1969	Director of Research and Evaluation, Twin Cities Educational Research Council
1970	Associate Professor of Educational Psychology, University of Minnesota, Assistant Dean, College of Education

Related Experience:

1968	Evaluation Consultant, Ginn and Company
1969	Editorial Advisory Board, Journal of Research in Science Teaching
1969	American Institute of Physics, Education and Manpower Committee
1969	Evaluation Director, Physical Science for Nonscientists
1969-70	Educational Consultant for Ford Foundation in Nigeria, Africa
1969	Committeeman-at-large, Section Q, Education American Association for the Advancement of Science
1970	Member of the Board, National Association of Research in Science Teaching

Professional Membership:

American Educational Research Association
National Association for Research in Science Teaching
American Association of Physics Teachers
National Council of Measurement in Education
National Science Teachers Association
Phi Delta Kappa
Central Association of Science and Mathematics Teachers
Association for the Education of Teachers of Science
Fellow of the American Association of the Advancement of Science

Presentations:

1. "A Measure of the Outcome of Physics Instruction," 1966 National Convention of the National Science Teachers Association, April 4, 1966, New York City.

2. "Personality and Characteristics of Innovative Physics Teachers," 1967 Annual Meeting of the American Educational Research Association, February 16-18, 1967, New York City.

3. "An Evaluation of Summer Institute Programs for Physics Teachers," 1967 Annual Meeting of the National Association for Research in Science Teaching, February 23-24, 1967, Chicago, Illinois.

4. "The Development of an Instrument for Inventorying Knowledge of the Processes of Science," 1967 Annual Meeting of the National Association for Research in Science Teaching, February 23-24, 1967, Chicago.

5. "Evaluation Activities of Harvard Project Physics," 1967 National Convention of the National Science Teachers Association, March 16-18, 1967, Detroit, Michigan.

6. "The Development of Achievement Tests for a New Physics Course," 1967 National Convention of the National Science Teachers Association, March 16-18, 1967, Detroit, Michigan.

7. "The Role of Evaluation in the Development of Harvard Project Physics," 1968 National Convention of the National Science Teachers Association, March 29-April 2, 1968, Washington, D. C.

8. "Physics Enrollments and Grading Practices," with Robert G. Bridgham, 1968 Annual Meeting of the National Association for Research in Science Teaching, February 9-11, 1969, Chicago, Illinois.

9. "Physics Achievement Gains as a Function of Teaching Duration," with Robert Bridgham, 1968 Annual Meeting of the National Association for Research in Science Teaching, February 9-11, 1968, Chicago, Illinois.

10. "Curriculum Evaluation--What Should It Tell Science Teachers?" Invited paper, Annual Meeting of the Delaware Teachers of Science, April 8, 1968, Newark, Delaware.

11. Participant and organizer of AERA symposium entitled "Evaluation in a National Curriculum Project." Presented paper entitled "Applied Research in a Curriculum Project - Accomplishments and Limitations." Annual meeting of the American Education Research Association, February 6, 1969, Los Angeles, California.

12. Invited paper for research seminar, "Evaluation in Science Curriculum Development." 42nd Annual Meeting of the National Association for Research in Science Teaching. February 9, 1969, Pasadena, California.

Presentations continued:

13. "Some Results of the Evaluation of Harvard Project Physics." 17th Annual Convention of the National Science Teachers Association. March 23, 1969, Dallas, Texas.

14. Instruction for Research Training Project of the National Association for Research in Science Teaching. November 12-14, 1969, Chicago, Illinois.

15. "Strategy for Curriculum Evaluation: A Case Study." Invited address to the University of Pennsylvania faculty colloquium. Graduate school of Education. December 3, 1969.

16. "Pretest-Treatment Interaction in Curriculum Evaluation. Annual Meeting of the American Education Research Association. March, 1970, Minnespolis, Minneosta.

Publications:

1. Welch, Wayne W. and Walberg, Herbert J., "A Design for Curriculum Evaluation," Science Education, 52, 1 (February, 1968), 10-16.

2. Walberg, Herbert J. and Welch, Wayne W., "A New Use of Randonmization in Experimental Curriculum Evaluation," School Review, 75, 4 (February, 1967), 369-377.

3. Walberg, Herbert J. and Welch, Wayne W., "Personality Characteristics of Innovative Physics Teachers," Journal of Creative Behavior, 1, 2 (Spring, 1967), 163-171.

4. Winter, Stephen S. and Welch, Wayne W., "Achievement Testing Program of Harvard Project Physics," The Physics Teacher, 5, 5 (May, 1967), 229-231.

5. Welch, Wayne W. and Walberg, Herbert J., "An Evaluation of Summer Institutes for Physics Teachers," Journal of Research in Science Teaching, 5 (1967-1968), 105-109.

6. Rutherford, F. James and Welch, Wayne W., "Evaluation Activities of Harvard Project Physics," Science Education News, American Association for the Advancement of Science (June, 1967). AAAS Publication No. 67-7, 5-6.

7. Welch, Wayne W., "High School Physics Enrollments," Physics Today 20, 9 (September, 1967), 9-13.

8. Welch, Wayne W., "The Impact of National Curriculum Projects--The Need for Accurate Assessment," School Science and Mathematics, 68, 3(March, 1967), 225-234.

9. Welch, Wayne W. and Walberg, Herbert J., "Are the Attitudes of Teachers Related to Declining Percentage Enrollments in Physics?" Science Education, 51, 5 (December, 1967) 436-442.

10. Welch, Wayne W. and Pella, Milton O., "The Development of an Instrument for Inventorying Knowledge of the Processes of Science, Journal of Research in Science Teaching, Vol. 5, No. 1 (1967)

11. Welch, Wayne W. and Bridgham, Robert, "Physics Achievement as a Function of Teaching Duration," School Science and Mathematics, Vol. LXVII, No.5 (May, 1968), 449-454.

12. Welch, Wayne W., "The Need for Evaluating National Curriculum Projects," Phi Delta Kappan, Vol. XLIX, No. 9 (May, 1968), 530-532.

13. Walberg, Herbert J. and Welch, Wayne W., "Dimensions of Personality in Selected Physics Teachers," Journal of Research in Science Teaching, Vol. V, No.4 (1967-68), 357-361.

14. Rothman, Arthur I., Welch, Wayne W., and Walberg, Herbert J., "Physics Teacher Characteristics and Student Learning," Journal of Research in Science Teaching, Vol. VI, No. 1 (1969), 59-63.

15. Walberg, Herbert J., Welch, Wayne W., and Rothman, Arthur I., "Teacher Heterosexuality and Student Learning," Psychology in the Schools, Vol. VI, No. 3 (July, 1969), 258-266.

16. Welch, Wayne W., "Correlates of Course Satisfaction in High School Physics," Journal of Research in Science Teaching, Vol. VI, No. 1 (1969), 54-58.

17. Welch, Wayne W. and Rothman, Arthur I., "The Success of Recruited Students in a New Physics Course," Science Education (May, 1968), 270-273.

18. Welch, Wayne W., Walberg, Herbert J., and Ahlgren, Andrew, "The Selection of a National Random Sample of Teachers for Experimental Curriculum Evaluation," School Science and Mathematics, Vol. LXIX, No. 3 (March, 1969), 210-216.

19. Welch, Wayne W., "Curricular Decisions - How Can Evaluation Help Science Teachers?" The Science Teacher, Vol. XXXV, (November, 1968), 22-25.

20. Anderson, Gary J., Walberg, Herbert J., and Welch, Wayne W., "Curriculum Effects on the Social Climate of Learning: A New Representation of Discriminant Functions," American Educational Research Journal, Vol. VI, (May, 1969).

21. Welch, Wayne W., "Some Characteristics of High School Physics Students: circa 1968," Journal of Research in Science Teaching, Vol. 6, No. 3, (1969), 242-247.

22. Bridgham, Robert F. and Welch, Wayne W., "Physics Enrollments and Grading Practices," Journal of Research in Science Teaching, Vol. VI, No. 1, (1969), 44-46.

23. Rothman, Arthur I., Walberg, Herbert J., and Welch, Wayne W., "Effects of a Summer Institute on Attitudes of Physics Teachers," Science Education, Vol. LII, No. 5 (December, 1968), 469-473.

24. Welch, Wayne W., "Curriculum Evaluation," Review of Educational Research, Vol. 39, No. 4 (October, 1969).

VITA

Paul E. Johnson

Education:

1960	B.S. University of Minnesota
1961	M.A.T. The Johns Hopkins University
1964	Ph.D. The Johns Hopkins University

Academic History:

1963-64	Research Assistant, Department of Psychology, The Johns Hopkins University
1964-68	Assistant Professor, Department of Educational Psychology, University of Minnesota
1968	Associate Professor, Department of Educational Psychology, University of Minnesota

Professional Activities:

1964	Member and SSRC Fellow, Conference on Learning and the Educational Process, Stanford University
1964-	Member, Center for Research in Human Learning, The University of Minnesota
1965-69	Consultant, Minnesota School Mathematics and Science Center

Editorial Responsibilities:

	Advisory editor in Educational Psychology for the Thomas Y. Crowell Co.
1965-68	Proposal reader, U.S. Office of Education
1969-70	Consulting editor, Journal for Research in Mathematics Education

Research Grants:

1965-66	Graduate School, University of Minnesota, "Problem Solving in Elementary Physics: The Role of Association"
1965-66	Office of International Programs of the University of Minnesota, "Inter-culture communication: A comparison of the intraverbal meaning of selected words from two language systems"
1967-68	Office of International Programs of the University of Minnesota, "The Cross-cultural Generality of Rules Governing Information Retrieval," (with P.W. Fox, Department of Psychology)

Research Grants (con't):

1967-69 Center for Curriculum Research, University of Minnesota. The Acquisition of Psychological Structures in Introductory Statistics (with F. Murray and R.O. Collier, Jr.)
1969-70 Graduate School of the University of Minnesota "Perceptual Structure of Concepts in Science"
1970-72 Basic Research Division, U.S. Office of Education, "Perceptual Structure of Scientific Knowledge"

Articles:

1. Johnson, P.E. Associative Meaning of Concepts in Physics. J. Educ. Psychol., 1964, 55, 84-88.

2. Johnson, P.E. Word Relatedness and Problem Solving in High School Physics. J. Educ. Psychol., 1965, 56, 217-224.

3. Johnson, P.E. Some Psychological Aspects of Subject Matter Structure. J. Educ. Psychol., 1967, 58, 75-83.

4. Johnson, P.E. Evaluation of Language Habits in a Behavioral Science Curriculum (2nd author with W.E. Gardner). The School Review, 1969, 76, 396-411.

5. Johnson, P.E. An Experimental Analysis of Written Instruction. Verbal Learning Research and the Technology of Written Instruction. (E.Z. Rothkopf and P.E. Johnson Eds.) Teachers College Press (in press).

6. Johnson, P.E. Associative Similarity of Words and Pictures (2nd author with S.J. Deno and J.R. Jenkins). Audio-Visual Communication Review, 1968, 16, 280-286.

7. Johnson, P.E. On the Communication of Concepts in Science. J. Educ. Psychol., 1969, 60, 32-40.

8. Johnson, P.E. A note on Methods of Indexing Associative Relatedness. (With R.O. Collier, Jr.) Behavior Research Methods and Instrumentation, 1969, 1, 140-142.

9. Johnson, P.E. Reversibility in Non conservation of weight. (2nd author with Frank B. Murray). Psychonomic Science, 1969, 16, 285-287.

10. Johnson, P.E. Psychological Reality of Physical Concepts (with David L. Cox and Thomas E. Curran). Psychonomic Science, 1970, 19, 245-247.

Papers:

1. Johnson, P.E. "Associative Organization Among Concepts in Subject Matters: An Illustration From Physics." Paper presented at the annual meeting of The American Educational Research Association, February, 1966.

2. Johnson, P.E. "The Structure of Associations to Word and Pictures: (2nd author with S.J. Deno and J.R. Jenkins). Paper presented at the annual meeting of The American Educational Research Association, February, 1966.

3. Johnson, P.E. "Language Habits and the Xyntax of Subject Matter." Paper presented at the annual meeting of the American Educational Research Association, February, 1967.

4. Johnson, P.E. "Language Habits in Behavioral Sciences: Their Role and Presentation in Instruction." (2nd author with W.E. Gardner). Paper presented at the annual meeting of The American Educational Research Association, February, 1967.

5. Johnson, P.E. "Information in Subject Matter Structure." (2nd author with B. Mussell). Paper presented at the annual meeting of The American Educational Research Association, February, 1967.

6. Johnson, P.E. "On the Configuration of Subject Matter." (2nd author with R. Thurner). Paper presented at the annual meeting of The American Educational Research Association, February, 1967.

7. Johnson, P.E. "Some Relevant and Irrelevant Transformations for Children's Concept of Weight." (2nd author with F. Murray). Paper presented at the annual meeting of The American Educational Research Association, February, 1968.

8. Johnson, P.E. "A Method for Measuring Language Habits in Science." (2nd author with R.E. Sandborgh). Paper presented at the annual meeting of The American Educational Research Association, February, 1968.

9. Johnson, P.E. "Some Verbal Aspects of Scientific Concepts." (2nd author with T.E. Curran and D.L. Cox Paper presented at the annual meeting of The American Educational Research Association, Febraury, 1969.

10. Johnson, P.E. "Perceptual Structure of Scientific Knowledge." (2nd author with David L. Cox and Thomas E. Curran). Paper presented at the annual meeting of The American Educational Research Association, March, 1970.

Papers (con't):

11. Johnson, P.E. "On Understanding the Laws of Invariance" (2nd author with Laurence J. Victor). Paper presented at the annual meeting of the American Educational Research Association, March, 1970.

12. Johnson, P.E. "Simulation of Scientific Knowledge" (2nd author with Judy Garrard). Paper presented at the annual meeting of The American Educational Research Association, March, 1970.

Invited Address:

1. Discussant, ONR and Columbia University conference on Verbal Learning and Research and the Technology of Written Instruction, March, 1966.

2. Coloquium papers presented at the Johns Hopkins University, the University of Delaware and the Bell Telephone Laboratories in Murray Hill, Spring, 1966.

3. Johnson, P.E. "The subject matter constraint in connected discourse." Paper presented at a symposium on The measurement of learning from connected discourse. Annual meeting of the Eastern Psychological Association, April, 1967.

4. Johnson, P.E." The origin of Item Forms. Paper delivered at a Symposium on Domain-Referenced Achievement Testing Systems. American Educational Research meeting, March, 1970.

Books:

1. Johnson, P.E. Psychology of School Learning. John Wiley & Sons, Inc. (in press).

2. Johnson, P.E. Learning: Theory and Practice (A Book of Readings). Thomas Y. Crowell (in press).

3. Johnson, P.E. Verbal Learning Research and The Technology of Written Instruction (2nd editor with E.A. Rothkopf) Teachers College Press (in press).

VITA

James S. Terwilliger

Degrees:

1957	B.S. University of Illinois
1960	M.A. University of Illinois
1962	Ph.D. University of Illinois

Area of Research Interest:

Major interest is in measurement and evaluation processes in educational settings. Secondary interests are: (a) measurement theory as applied to the construction of psychological scales and tests, viz. measurement of abilities, aptitudes, interests and values, and (b) statistical methodology.

Experience:

1958-59	Graduate Teaching Assistant (Elementary Statistics), Dept. of Psychology, University of Illinois
1959-60	Graduate Research Assistant, Bureau of Educational Research, College of Education, University of Illinois (Dr. Lee J. Cronbach, Principal Investigator)
1961-63	Associate Research Psychologist, Educational Testing Service, Princeton
1963-66	Assistant Professor of Psychology, Peabody College
1966-67	Assistant Professor of Educational Psychology, University of Minnesota
1967-70	Associate Professor of Educational Psychology, University of Minnesota

Memberships and Honors:

Phi Beta Kappa
Phi Kappa Phi
Sigma Xi
Psychometric Society
American Psychological Association
National Council on Measurement in Education
American Educational Research Association

Publications:

1. Terwilliger, James S. & Fiedler, F.E. An investigation of determinants inducing individuals to seek personal counseling. J. Con. Psych., 1958, 22, 288.

2. Terwilliger, James S. Dimensions of occupational preference. Educ. Psych. Meas., 1963, 525-543.

3. Terwilliger, James S. Grading systems and practices in the secondary schools, 1962. (Mineographed report)

4. Skager, R.W. Terwilliger, James S., & Bussis, A. Non-intellective correlates of academic achievement. ETS Research Bulletin, 1965.

5. Terwilliger, James S. Self-reported marking practice and policies in public secondary schools. Bulletin of National Association of Secondary-School Principals, 1966, 5-37.

6. Terwilliger, James S. Attitudes and environmental aspects of medical careers. Tech. Report No. L664, Office of Basic Research, Assoc. of American Medical Colleges, Evanston, Illinois, 1966. (Also listed as paper read at 1966 APA Convention)

7. Terwilliger, James S. An investigation of marking practicies of secondary school teachers. Final report of research under USOE Contract S-619-65. (Mimeograph), August, 1966.

8. Terwilliger, James S. The nature of intelligence: the factor analytic approach. (In press) Chapter in Psychometric Intelligence edited by H. Carl Haywood and to be published by Appleton-Century-Crofts sometime in 1970.

9. Terwilliger, James S. Individual differences in the marking practices of secondary school teachers. J. Ed. Measurement, 1968 (Spring), 9-15.

10. Terwilliger, James S. and Anderson, Douglas H. An empirical study of the effects of standardization in the formation of linear composites. J. Ed. Meas., 1969 (fall), 145-154. (Revision of paper read at 1969 NCME meetings and listed under papers.)

11. Terwilliger, James S. Student Evaluation and Grade Assignment in Secondary Schools. Book for secondary teachers lished by Scott-Foresman and Co. in late 1970.

Papers presented at professional and scientific meetings:

1. "Representation of vocational interests on an absolute scale." Paper read at APA, Sept., 1960, Chicago.

2. "Dimensions of occupational preference." Read at APA, Sept., 1962, St. Louis.

3. "New insights into marking practices--a preliminary research report." Read at the annual meetings of the National Association of Secondary School Principals, Feb., 1964, Chicago.

4. "Self-reported grading practices of secondary school teachers." Read at APA, Sept., 1964, Los Angeles.

5. Dimennsions of marking." Read at annual NCME meeting, February, 1966, Chicago.

6. "Philosophical and psychometric problems in the measurement of interests." Read at the 1966 Symposium on Interest Measurement sponsored by the Center for Interest Measurement Research, University of Minneosta, May, 1966.

7. "Attitudes and environmental aspects of medical careers." Presented as part of a symposium on "Measurement of Career Attitudes and Interests in a Changing Profession" at APA, Sept., 1966, New York.

8. "Variation in secondary school marking practices." Read at annual NCME meeting, February, 1967, New York.

9. "Teacher assigned marks using simulated data." Read at annual NCME meeting, February, 1968, Chicago.

10. "An empirical study of the effects of standardization in the formation of linear composites. (with Douglas Anderson). Read at annual NCME meeting, February, 1969, Los Angeles.

11. "A generalized index for comparing weighting procedures." To be read at the annual NCME meeting, March, 1970, Minneapolis.

12. "A Monte Carlo investigation of the robustness of the null hypothesis test in bivariate correlation." (with Rod L. Rosse) To be read at the annual AERA meeting, March, 1970, Minneapolis.

Unpublished papers and informal notes:

1. "Some methodological considerations in the prediction of academic achievement." 1963.

Unpublished papers and information notes:

2. "Some notes on partial correlation." Mimeo, 1963.

3. "Comments on partial correlation involving fallible measures." (with Ledyard Tucker and Albert Myers), 1964.

4. "A note on the relationship between the intraclass correlation and the correlation ratio as indices of interjudge reliability." Ditto, 1965.

5. "McNemar's test for change under two probability models." 1967.

VITA

John Edward Rhetts

Education:

1961	Certificate Goethe-Institut, Murna/Obb., Germany
1960-64	A.B., Major: Philosophy; Faculty Citation for Excellence, March 1964 Dartmouth College, Hanover, N.H.
1965-66	Ed.M., Major: Human Development Harvard University, Cambridge, Massachusetts
1966-69	NIMH Fellow: 1966-68. Training in Psychopathology Editor: Cornell Journal of Social Relations,
1970	Ph.D., Major: Human Development, Research Methods and Evaluation, Minor: Social Psychology Dissertation: The influence of cognitive response style on discrimination and learning in second grade children Cornell University, Ithaca, N.Y.

Occupational Experience:

1964	Supervisor; Volunteer Case-Aide Workers Metropolitan State Hospital, Waltham, Massachusetts
1964-66	Project Leader; Experimental Intervention Counseling Team, Boston State Hospital; Boston, Massachusetts
1964-66	Research Consultant; Supervised Group and Individual Theraphy with Karl T. Dussik, M.D., Assistant to the Commissioner of Mental Health, Commonwealth of Massachusetts; Metropolitan State Hospital, Waltham, Massachusetts
1964-65	Research Associate; Northeastern University, and Boston State Hospital; Boston, Massachusetts
1966	Research and Methods Consultant; Educational Services Incorporated, Pre-College Center Newton, Massachusetts
1967	Research and Methods Consultant; Harvard School of Public Health; Department of Behavioral Sciences Boston, Massachusetts
1969-70	Co-Leader in Group Counseling with G.B. Jones, Ph.D., Counseling Psychologist, California State College at Hayward, California
1969-70	Associate Research Scientist; American Institutes for Research, Palo Alto, California Assistant Professor; Department of Psychological Foundations of Education, University of Minnesota

Publications:

1. Rhetts, J.E., & Stotsky, B.A. The nursing home: Therapeutic community of little state hospital for psychiatric patients? J. Amer. Geriatrics Soc., 1965, 13, 982-988.

2. Dussik, K.T., & Rhetts, J.E. The disengagement from schizophrenic lanquor. Paper presented to the Medical Psychiatry. Atlantic City, N.J., May, 1966.

3. Stotsky, B.A., & Rhetts, J.E. Changing attitudes toward the mentally ill in nursing homes. Nursing Research, 1966,15, 175-177.

4. Stotsky, B.A., & Rhetts, J.E. Factorial study of psychopathology in psychiatric patients successfully placed in nursing homes. J. Amer. Geriatrics Soc., 1967, 15, 437-447.

5. Stotsky, B.A., & Rhetts, J.E. Functional significance of attitudes toward the mentally ill among nursing home personnel. J. Social Psychology, 1967, 71, 79-85.

6. Rhetts, J.E. The impact of student learning style on curriculum assignment and performance in the PLAN program of individualized instruction. Paper presented in Symposium, Am. Educat. Res. Assoc., Minneapolis, Minnesota, March, 1970; Published in Education, 1970, 90 (3), 284-251.

7. Rhetts, J.E. The influence of cognitive response style on discrimination and learning in second grade children. (In press)

8. Rhetts, J.E., & Jones, G.B. An analysis of alternative planning strategies for youth development and delinquency prevention (In Press)

Subcontractor #4: Control Data Corporation

TECHNICAL PROPOSAL

GP266

for

The Development and Production of Training Materials

Prepared for

The Upper Midwest Regional Educational Laboratory

December 8, 1970

Control Data Corporation
Control Data Education Institute
Minneapolis, Minnesota

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1.0 EXECUTIVE SUMMARY

Control Data Corporation (CDC) is pleased to present this proposal to the Upper Midwest Regional Educational Laboratory (UMREL) under which CDC proposes to produce training materials to be used for the training of persons in the design and production of training materials. The training materials produced by CDC are intended to be used within the Midwest Educational Training Center (METC) in order to provide learning experiences for persons in the areas of educational development and evaluation.

In order to produce effective and meaningful training materials, CDC will perform the tasks of:

- Evaluation of existing materials
- Development of new training materials
- Pilot testing of developed materials
- Training material production
- Consulting services

UMREL can be assured that the expertise and experience of CDC in developing the proposed training materials will be fully utilized. We at Control Data feel very strongly that we can make a meaningful contribution to the Midwest Educational Training Center's objectives by providing current state-of-the-art technology in the development of training materials.

2.0 TECHNICAL PROPOSAL

2.1 Evaluation of Existing Materials

CDC's first task after award of contract will be to conduct a thorough evaluation of those presently available "off-shelf"

{off-shelf referring to materials already published and currently available for sale} individualized instructional materials which were identified by CDC and UMREL during the proposal preparation phase under RFP-70-12 as being applicable to those instructional experiences needed by curriculum development specialists and instructional development specialists. CDC will evaluate those "off-shelf" materials identified as of November 30, 1970 {see Appendix B} plus any additional appropriate "off-shelf" materials which appear on the market between December 1, 1970 and the proposed contract start date of February 1, 1971. Upon completion of the evaluation phase of the contract, CDC will submit a report listing those "off-shelf" materials which are acceptable because they meet the previously stated objectives and are acceptable in terms of target population requirements {intellectual level, reading level, etc.}

2.2 Development of New Training Materials

The second phase of this contract will involve the development by CDC of fifteen {15} individualized/self-instructional modules and one group mode course.

The term, self-instructional module, as used herein refers to a package/collection of instructional experiences which has been developed to allow a student to proceed through the experiences at his own rate, without the aid of an instructor, and enables him, upon completion of the module, to meet certain pre-specified objectives. A collection

of experiences is called a module, since it is designed in such a manner as to allow it to be used by itself or as a building block to be combined with other modules to build courses of various lengths. The term Group Mode Course as used herein refers to a course that is presented by an instructor using a course outline and supporting material such as overhead transparencies, student workbooks, case studies, etc.

2.2.1 Partial Self-Instructional Modules

During the development phase of any contract resulting from this proposal, CDC will develop eleven (11) partial self-instructional modules. A "partial module" will be developed for topics where voids remain because of a lack of sufficient appropriate "off-shelf" materials and include:

- How to Prepare a Time/Cost Analysis for Developing an Instructional Package.
- How to Determine Student Population Characteristics and Develop Prerequisites.
- How to Evaluate Off-Shelf Materials.
- How to Sequence Learning Elements.
- How to Select Appropriate Media.
- How to Develop the First Draft of an Instructional Package.
- How to Conduct a Developmental Tryout of an Instructional Package.
- How to Revise an Instructional Package.
- How to Field Test an Instructional Package.
- How to Develop Multi-Media Instructional Packages.
- How to Develop Programmed Lesson Plans.

An example of a partial self-instructional module is referred to as module/topic 5 in Appendix A.

2.2.2 Complete Self-Instructional Modules

During the development phase of any contract resulting from this proposal, CDC will develop four (4) complete self-instructional modules. A "complete module" will be developed for a topic where no appropriate "off-shelf" materials are available and include:

- How to Identify and Define a Problem.
- How to Conduct a Problem Feasibility Study.
- How to Conduct a Technique Edit of an Instructional Package.
- How to Implement and Administer the Use Instructional Packages.

An example of a complete self-instructional module is referred to as module/topic 3 in Appendix A.

2.2.3 Group Mode Course

During the development phase of any contract resulting from this proposal, CDC will develop one (1) group mode course entitled "How to Supervise an Instructional Materials Development Activity". The finalized course will include a detailed lesson plan and a master copy of all other supporting materials including but not limited to overhead transparencies, handouts, and case studies.

2.2.4 Other Development Considerations

2.2.4.1 Included within the development phase of this contract, CDC will conduct whatever developmental testing (a testing procedure used to try out a module on one or two students to uncover and correct any omissions

or incorrect references that are sometimes missed during initial writing of the module} is required of the above mentioned fifteen {15} self-instructional modules to ensure that the modules are complete before they are pilot tested.

2.2.4.2 All of the new training materials developed by CDC, except the one group mode course, will be self-instructional. Although self-instructional materials cost more to develop initially, they are actually more cost-effective to implement since the only recurring cost is the cost of reproduction {printing} whereas each time a group mode course is presented instructor salary costs as well as reproduction costs will be incurred.

2.2.4.3 If, during the development phase of any contract resulting from this proposal, the need for the development of any additional instructional materials arises beyond the fifteen {15} self-instructional modules and the one {1} group mode course, CDC will negotiate for the development of those materials at that time.

2.2.4.4 The content of each module described in Section 2 shall be established by Control Data. Major variations in or from the established module content requested by UMREL shall be considered by Control Data and, upon the mutual agreement and for any additional consideration which may be specified, included as part of said module.

2.3 Pilot Testing

After the new materials described in Section 2.0 have been developed, CDC will engage in a materials test phase where a limited number of students (provided and paid for by UMREL) will be put through the training sequence. During this phase, CDC will make revisions to the material it originally developed as dictated by the results of the information obtained during the training sequence.

2.4 Training Material Production

Upon completion of pilot testing, the materials originally developed by CDC will go through final production including editing, typing, graphics, recording, filming, etc. CDC will provide UMREL with a master copy of each module from which UMREL can reproduce as many copies as needed for full scale implementation. The master copy could be, depending on the media used, camera ready copy (for a paper and pencil unit), master audio tape, or a master piece of film (for slides, filmstrip, or motion picture).

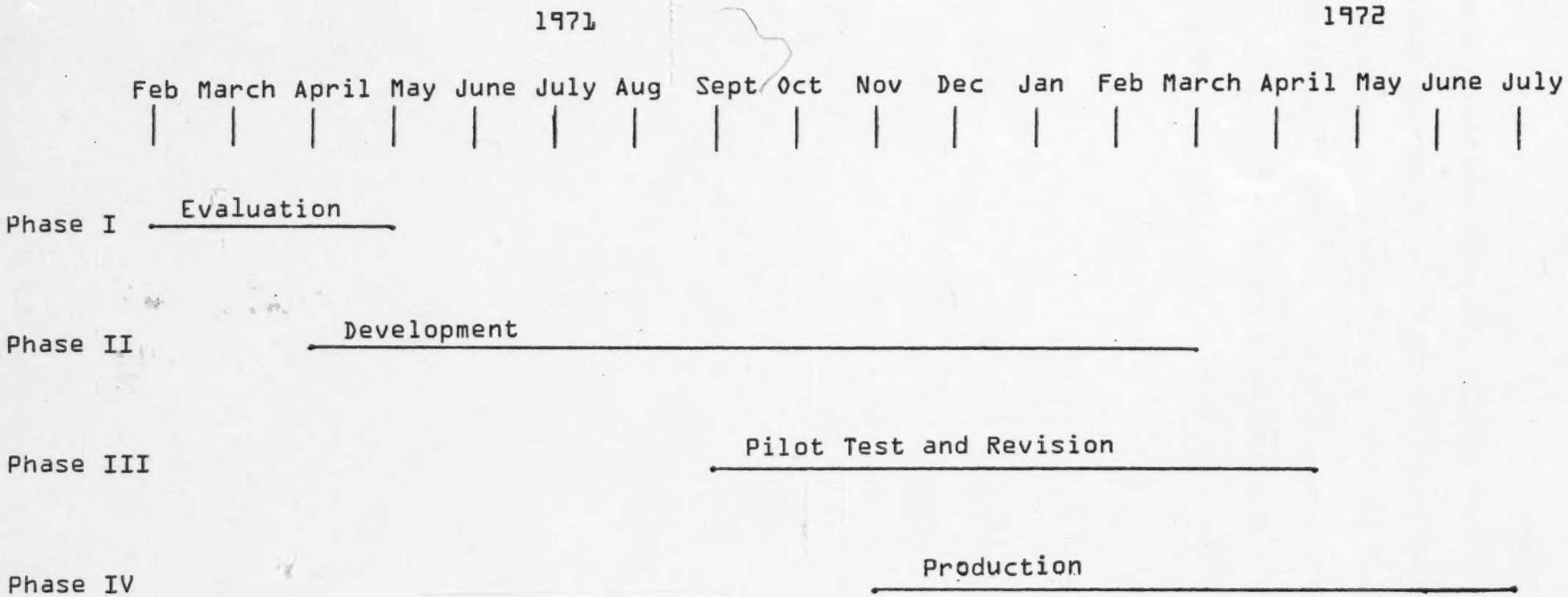
2.5 Consulting Services

CDC will provide consulting services in the areas of materials development, materials production, and data processing to other members of the consortium on a need basis. A basic amount of time is included in this proposal for this service and any additional consulting services beyond this amount of time will be negotiated.

2.6 Milestone Chart

The events listed on the attached milestone chart are predicated upon the fact that contract award is made prior to February 1, 1971. If contract award is made after February 1, 1971, Control Data can begin the evaluation phase as outlined in Section 2.1 ten (10) days after contract award.

MILESTONE CHART



3.0 PRICING SCHEDULE

3.1 Evaluation {Reference Section 2.1} $ 10,398

Payment will be made upon completion of the evaluation and the submission of the evaluation report to UMREL.

3.2 Development of New Training Materials $117,841
{Reference Section 2.2}

3.2.1 Self-Instructional Modules - $114,375

The following Payment Schedule will apply to each of the fifteen self-instructional modules.

- First payment of $2,000 after acceptance by UMREL of specific behavioral objectives and criterion items for each module.
- Second payment of $3,500 after acceptance by UMREL of first draft of each module.
- Final payment of $2,125 after completion of developmental testing and acceptance of the module by UMREL.

3.2.2 Group Mode Course - $3,466

Payment will be made after the course has been accepted by UMREL.

3.3 Pilot Testing and Revision {Reference Section 3.0} $ 13,864

The following payment schedule will apply to the pilot testing program.

- Payment of $6,932 upon completion of pilot testing, revisions, and acceptance by UMREL of eight {8} self-instructional modules.

- Payment of $6,932 upon completion of pilot testing, revisions, and acceptance by UMREL of the remaining seven (7) self-instructional modules.

3.4 Material Reproduction (Reference Section 4.0) $ 15,317

The following payment schedule will apply to the production of materials.

- Payment of $3,500 when the master copy for each of three self-instructional modules and documentation for the group mode course are accepted by UMREL.

- Payment of $4,000 when the master copy for each of the next four self-instructional modules are accepted by UMREL.

- Payment of $4,000 when the master copy for each of the next four self-instructional modules are accepted by UMREL.

- Payment of $3,817 when the master copies for the final four self-instructional modules are accepted by UMREL.

3.5 Consulting Services (Reference Section 5.0) $ 5,600

3.5.1 Consulting rate for materials development and materials production.

20 days at $200/day = $4,000

3.5.2 Consulting rate for data processing topics

5 days at $320/day = $1,600

3.6 Total Price of Proposal $163,020

3.7 Limitation of Remedy

UMREL's sole and exclusive remedy for any non-performance by Control Data under or pursuant to this proposal shall be limited to the refund by Control Data to UMREL of all amounts paid by UMREL to Control Data for any item as to which Control Data fails to fulfill its obligations under this proposal and in no event include any incidental or consequential damage.

(Appendix A)

MODULES REQUIRED TO PROVIDE INSTRUCTIONAL EXPERIENCES FOR CURRICULUM DEVELOPMENT SPECIALISTS AND INSTRUCTIONAL DEVELOPMENT SPECIALISTS

Required Modules/Units	Master List Objectives	Available Off-Shelf Materials	New Development Required
BASIC MODULES -			
1) Introduction to Instructional Technology		Complete Module GPT - Introduction to Instructional Technology McGraw Hill-Technology and Education	(No new development required)
2) The Systems Approach to Instructional Design		Complete Module Tieman-Programming is a Process National AV Center - Programmed Instruction-The Development Process National AV Center-Systems Analysis GPT - Introduction to Basic Peripherals	(No new development required)
3) How to Identify and Define a Problem	9		Complete Module
4) How to Conduct a Problem Feasibility Study	7		Complete Module
5) How to Prepare a Time/Cost Analysis for Developing an Instructional Package	45,46 47	Partial Module Department of Defense-Introduction to PERT	Partial Module
6) How to Select a Subject Matter Expert (SME)		Complete Module GPT - Subject Matter Experts	(No new development required)
7) How to Conduct a Task/Content Analysis	5,6 8,14, 16,17, 18,40	Complete Module GPT-Kinds of Task Analysis GPT-Task Analysis GPT-Content Analysis GPT-Simulated Task Analysis	(No new development required)

Modules Required to Provide Instructional Experiences for Curriculum Development Specialists and Instructional Development Specialists
PAGE 2

Required Modules/Units	Master List Objectives	Available Off-Shelf Materials	New Development Required
BASIC MODULES Cont.			
8} How to Determine Student Population Characteristics and Develop Prerequisities	30, 36	Partial Module GPT - Job Performance Requirements	Partial Module
9} How to Develop a Prerequisite Know-lege/Skill Evaluation Instrument	35, 41 44	Complete Module VIMCET - Evaluation GPT - Entry Level AIR - Handbook of Procedures for the Design of Instruction	{No new devel-opment required}
10} How to Write Performance Objectives and Measurement Criteria {Criterion Items}	1, 2, 3, 4 10, 11 28, 29 31, 32 34, 38 39, 52 61	Complete Module VIMCET - Educational Objectives VIMCET - Establishing Performance Standards VIMCET - Selecting Appropriate Educational Objectives INSGROUP - Objectives for Instructional Programs GPT - Instructional Goals and Objectives GPT - Components of Objectives GPT - Classes of Objectives GPT - Criterion Performance Evaluation GPT - Generalization AIR - Handbook of Pro-cedures for the Design of Instruction	{No new devel-opment required}
11} How to Develop Pre and Post Tests	13, 19 50	Complete Module VIMCET - Evaluation AIR - Handbook of Pro-cedures for the Design of Instruction Indiana U A-V Center - Teacher Education Series: Educational Testing	{No new devel-opment required}

Modules Required to Provide
Instructional Experiences for
Curriculum Development Specialists
and Instructional Development Specialists
PAGE 3

Required Modules/Units	Master List Objectives	Available Off-Shelf Materials	New Development Required
{continued from page 2}			
11} How to Develop Pre and Post Tests		Oregon State Higher Education - Individualized Instruction: Diagnostic and Instructional Procedures	
12} How to Evaluate Off-Shelf Materials		Partial Module NEA - Selection and Use of Programmed Materials	Partial Module
13} How to Sequence Learning Elements	12, 20 21, 22 23, 24 37, 56 57, 58 59, 60 67, 68 73, 74 76, 77 78, 79 81	Partial Module GPT - Course Content Determination VIMCET - Perceived Purpose VIMCET - Systematic Instructional Decision-Making GPT - Behavioral Blueprint GPT - Adaptive Individualization and Sequencing GPT - Mediators and Job Aids GPT - Stimulus and Response Tables GPT - Classification of Performance GPT - Scanning and Matching GPT - Chains AIR - Handbook of Procedures for the Design of Instruction	Partial Module
14} How to Select Appropriate Media	48, 49 83, 84 87, 88 93	Partial Module GPT - Instructional Media McGraw Hill - 35mm Filmstrips Mc Graw Hill - 16mm Motion Pictures McGraw Hill - Tape and Disc Recordings McGraw Hill - 8 mm Motion Pictures McGraw Hill - Television McGraw Hill - Programmed Instruction Scott - Conventional Media Scott - Visual Communications AIR - Handbook of Procedures for the Design of Instruction National Center for Audio Tape-A-V Education	Partial Module

Modules Required to Provide Instructional Experiences for Curriculum Development Specialists and Instructional Development Specialists
PAGE 4

Required Modules/Units	Master List Objectives	Available Off-Shelf Materials	New Development Required
15} How to Develop the First Draft of an Instructional Package	25, 62 64, 66 85, 86 91, 92 94, 95 96, 97	Partial Module VIMCET - Appropriate Practice GPT - Interactive Instruction GPT - Simulation and Practice Requirements AIR - Handbook of Procedures for the Design of Instruction	Partial Module
16} How to Conduct a Technique Edit of an Instructional Package			Complete Module
17} How to Conduct a Developmental Tryout of an Instructional Package	26, 65 69, 70 71, 75 82	Partial Module GPT - Validation AIR - Handbook of Procedures for the Design of Instruction	Partial Module
18} How to Revise an Instructional Package	27, 72 80, 98	Partial Module AIR - Handbook of Procedures for the Design of Instruction	Partial Module
19} How to Field Test an Instructional Package	54, 55	Partial Module GPT - Validation	Partial Module
ADVANCED MODULES			
20} How to Develop Multi-Media Instructional Packages	89	Partial Module National ITV Center A Demonstration of Programmed Television Instruction McGraw Hill- Rotary Combustion Engine McGraw Hill - Sound and the Human Ear McGraw Hill - Haiku Poetry CDI/ME-CAI {Computer Assisted Instruction Workshop}	Partial Module

Modules Required to Provide
Instructional Experiences for
Curriculum Development Specialists
and Instructional Development Specialists
PAGE 5

Required Modules/Units	Master List Objectives	Available Off-Shelf Materials	New Development Required
ADVANCED MODULES Cont.			
21} How to Develop Programmed Lesson Plans		Partial Module GPT - Designing Group Presentations GPT - Programmed Lesson Plans GPT - Programmed Lesson Plans	Partial Module
22} How to Implement and Administer the Use of Instructional Packages	15, 51 53, 63		Complete Module
23} How to Supervise an Instructional Materials Development Activity			Complete Module

(Appendix B)

Presently available off-shelf instructional materials which will be evaluated to determine usefulness within the National Educational Training Center's curriculum for Curriculum Development Specialists and Instructional Development Specialists.

1. "Objectives for Instructional Programs" - Insgroup - $75.00 {Multi-Media Package}

2. Validated Instructional Materials {Filmstrip-audiotape series} - Vimcet - $12.50 each = $87.50 set

   a} "Educational Objectives"
   b} "Systematic Instructional Decision-Making"
   c} "Selecting Appropriate Educational Objectives"
   d} "Establishing Performance Standards"
   e} "Appropriate Practice"
   f} "Perceived Purpose"
   g} "Evaluation"

3. "Programming Is A Process" - Tieman - $15.00 {Filmstrip-audiotape Program}

4. "Programmed Instruction - The Development Process" Film - National A-V Center - $32.50

5. "Introduction to Instructional Technology" - GPT - $25.00

6. "Individualized Instruction" {Multi-Media} - DAVI - $77.50

7. Instructional Technology Workshop - GPT - $3,300 {audiscan version} {Filmstrip-audiotape series}

   a} "Introduction to Instructional Technology"
   b} "Introduction to Basic Principles"
   c} "Instructional Goals and Objectives"
   d} "Components of Objectives"
   e} "Classes of Objectives"
   f} "Criterion Performance Evaluation"
   g} "Generalization"
   h} "Job Performance Requirements"
   i} "Entry Level"
   j} "Course Content Determination"
   k} "Stimulus and Response Tables"
   l} "Classification of Performance"
   m} "Kinds of Task Analysis"
   n} "Task Analysis"
   o} "Scanning and Matching"
   p} "Chains"
   q} "Content Analysis"
   r} "Simulated Task Analysis
   s} "Behavioral Blueprint"
   t} "Subject Matter Experts"
   u} "Mediators and Job Aids"
   v} "Interactive Instruction"
   w} "Simulation and Practice Requirements"
   x} "Designing Group Presentations"

y} "Programmed Lesson Plans"
z} "Programmed Lesson Plans"
o} "Instructional Media"
o} "Adaptive Individualization and Sequencing"
o} "Validation"
o} "Validation"

8. Educational Media Kit - McGraw Hill

Sub Kits -

a} 35mm Filmstrips - 10.95
b} 16mm Motion Pictures - 2.95
c} Tape and Disk Recordings - 24.95
d} 8mm Motion Pictures - 28.95
e} Television - 142.95
f} Programmed Instruction - 106.95
g} Instructional Materials Center - 44.95

9. Basic Educational Graphics - Scott Education
{Multi-Media Package} - $235.00

10. Conventional Media - Scott Education
{Multi-Media Package} - $185.00

11. Cameras in Education - Scott Education
{Multi-Media Package} - $135.00

12. Programmed Instruction - Scott Education
{Multi-Media Package} - $65.00

13. Visual Communications - Scott Education
{Overhead Transparencies - $52.00

14. Sample Multi-Media Packages - McGraw Hill

Rotary Combustion Enginer - $76.95
Sound and the Human Ear - $58.95
Haiku Poetry - $43.95

15. Mager - Preparing Instructional Objectives

16. Harless

17. Southwest Regional Lab Objectives

18. AIR

Handbook of Procedures for the Design of Instruction

19. Mc Graw-Hill - Technology and Education

20. National AV Center - Systems Analysis.

21. Indiana U A-V Center-Teacher Education Series: Educational Testing.

22. Oregon State Higher Education-Individualized Instruction: Diagnostic and Instructional Procedures.

23. NEA - Selection and Use of Programmed Materials.

24. National Center for Audio Tape - A-V Education.

25. National ITV Center - a demonstration of Programmed Television Instruction.

26. CDI/ME-CAI {Computer Assisted Instruction Workshop.}

CORPORATE HEADQUARTERS
8100 34TH AVENUE SOUTH, MINNEAPOLIS, MINNESOTA 55440 / 612-888-5555

CONTROL DATA
CORPORATION

December 9, 1970

Mr. David N. Evans
Upper Midwest Regional Educational Laboratory
1640 East 78th Street
Minneapolis, Minnesota 55423

Dear Dr. Evans:

On behalf of Control Data Corporation, I wish to express our eagerness to engage the resources of Control Data with those of the Upper Midwest Regional Educational Laboratory, The University of Minnesota, and other members of the consortium. Upon examining the plan and data generated by the consortium I believe that a quality educational product is forthcoming and capable of meeting the urgent needs of today's educational and training environment.

The rapidly changing needs of modern day society are very demanding of the educational system and efforts to respond to these needs are often hampered by communication difficulties. This project is an example of how cooperation between the academic community and industry can realize dividends for all of society.

Accordingly, the contract proposal of Control Data Corporation is designed to make a maximum contribution to the total effort which will make the Midwest Education Training Center a dynamic instrument of progress.

Sincerely,

L. G. Kinney
General Manager
Control Data Education Institutes

CORPORATE HEADQUARTERS
8100 34TH AVENUE SOUTH, MINNEAPOLIS, MINNESOTA 55440 / 612-888-5555

CONTROL DATA
CORPORATION

December 8, 1970

Upper Midwest Regional
Educational Laboratory
1640 East 78th Street
Minneapolis, Minnesota 55423

Gentlemen:

Thank you for allowing Control Data Corporation (CDC) the opportunity to present the Upper Midwest Regional Educational Laboratory (UMREL) with a proposal for the development and production of training materials to be used for the training of curriculum development and instructional development specialists.

Control Data has had extensive experience in the design, development, and production of training materials similar to those required by the Upper Midwest Training Laboratory. We have proven experience and capabilities to fulfill the commitments presented in this proposal.

Over the next several months, we plan to work closely with responsible UMREL personnel in order to better acquaint you with Control Data capabilities and intentions in meeting your training materials development objectives.

This letter and the attached documents constitute the proposal by Control Data Corporation to UMREL. The proposal, effective for sixty (60) days from the date of this letter, is an invitation to enter into a contract with Control Data Corporation.

After you have had the opportunity to review this proposal, we are looking forward to discussing it with you at your earliest convenience.

Sincerely,

R. F. Wallsinger

R. F. Wallsinger
Contracts Administrator
Control Data Education Institutes

kb
Attachments

VITA

Robert A. Fallon

Education:

1950 - 1953	B.S. St. Mary's College (Mathematics)
1957 - 1962	M.A. De Paul University (Education)
1967 -	Ph.D University of Minnesota (Education candidate)*

Other universities and colleges attended:

Illinois Institute of Technology
St. Louis University
Washington University
Stout Institute
Winona State College
La Salle College

* All requirements for the Ph.D are fulfilled except that of writing and defending the dissertation.

Honors & Professional Associations

1966	I/D/E/A - Fellowship at Amherst College - Sponsored by the Kettering Foundation
1968 - 1969	Practicum for Educational Programs Fellowship - Sponsored by the Ford Foundation

Member of: ASCD, NASSP, and MEA

Writing

M. A. Thesis - Adaptation of the Minnesota Counseling Inventory "Improvement of Instruction Program," The Catholic Educator, January, 1969.

Professional Experience

1953 - 1957	De La Salle Institute - Teacher: Math, Industrial Arts
1957 - 1962	Christian Brothers' College High School - Teacher: Math, Eng. Drawing

Professional Experience (continued)

1962 - 1968	Benilde High School - Principal
1968 - 1969	Benilde High School - Superintendant
1968	Upper Midwest Regional Educational Laboratory - Research Assistant
1970 - present	Control Data Corporation - Director of Learning Technology

VITA

Thomas F. Mehring

Education:

1963	B.S., Industrial Education; Stout State University
1964	M.S., Industrial Education: Stout State University
	Advanced coursework in Educational Technology: California State College at Fullerton: Fullerton, California Chapman College, Orange, California

Experience:

1963-65	Fullerton Union High School District, Lowell High School, La Habra, California Teacher-Industrial Arts (Graphic Arts)
1965-66	Litton Instructional Materials, Inc., Anaheim, California Instructional Programmer (Self-instructional texts and mass-media instructional packages.)
1966-67	Hoffman Information Systems, Inc., Monrovia, California Supervisor of Audio-Visual Programming-Industrial Education Area
1967	Garden Grove Unified School District, Pacifica High School, Garden Grove, California; Teacher-Industrial Arts (Graphic Arts)
1967	Aerojet-General Corporation, Azusa, California Product Training Instructor
1967-68	Technomics, Inc., Santa Monica, California Instructional Programmer (P.I.- C.A.I.)
1968-69	Continuation Education System Development Project (PACE), La Puente, California Coordinator of Instructional Resources (Project Year II) Research Associate (Project Year I)
1969-70	Control Data Corporation, Minneapolis, Minnesota; Manager, Advanced Development Department, Learning Technology Directorate Supervisor, Audiovisual Production, Graphic Services Department; Programmed Learning Specialist-Methods and Techniques Department Training Specialist-Educational Development Department

Programs:

1966 Light - Characteristics and Behavior, Litton Instructional Materials, Inc., Anaheim, California,

1965 Programmed Text (Linear) The Color Wheel, Hughes Unitutor Publications, Videosonic Systems Division, Hughes Aircraft Company, Fullerton, California

1968 Audio-Visual Program, The Vernier Caliper, Hoffman Information Systems, Inc., Monrovia, California

1968 Teaching Machine Programs (Branching Morelco El-9000) How to Operate the Norelco El-9000 Teaching Machines, Technomics, Inc., Santa Monica, California

1968 How to Write Programmed Instruction, Technomics, Inc., Santa Monica, California

Professional Organizations:

1. National Society for Programmed Instruction
2. International Graphic Arts Education Association
3. Department of Audio-Visual Instruction (NEA)

Subcontractor #5: Southwest State College (Marshall, Minnesota)

The Division of Education at Southwest State College will provide assistance to the Consortium to:

1) Develop and test a management system for individualized instruction
2) Test options for delivery of instruction in educational development and evaluation.

This assistance will take the shape of personnel dedicated to Consortium interests and participation in program goverance.

Budget:

	to 6/71	6/72	6/73	6/74
Staff (½FTE)	3,750	7,500	8,000	8,000
Travel and per diem	500	500	500	500
Total	4,250	8,000	8,500	8,500

SOUTHWEST MINNESOTA STATE COLLEGE

MARSHALL, MINNESOTA

December 11, 1970

Mr. John C. Egermeier, Chief
Research Training Branch
National Center for Educ. Research & Development
U.S. Office of Education
Room 3051
400 Maryland Ave., S.W.
Washington, D.C. 20202

Dear Mr. Egermeier:

The attachment of this letter to the proposal entitled, "Training for Development and Evaluation in Education", is to inform you that Southwest Minnesota State College will commit its resources as a participating member of the project.

This project is in keeping with the Mission of the College and will allow us to continue our efforts in the development and perfection of a management and evaluation system for individualized instruction.

Sincerely,

Howard A. Bellows

Howard A. Bellows
President

HAB:rdh

VITA

Roger A. Raymond

Education:

1949 - 1951	B.A. University of South Dakota (Experimental Psychology)
1953 - 1954	M.A. University of South Dakota (Experimental Psychology)

Other Educational Attendance:

Augustana College
Sioux Falls College
IBM Training Center
CDC Management Education
PRAXIS Corporation

Professional Experience:

8/70 - present	Southwest State College - Associate Director of the Higher Education Coordinating Committee
6/70 - 7/70	Control Data Corporation - Manager, Advanced Development CDEI
3/69 - 5/70	Control Data Corporation - Manager, Curriculum Development CDI/CT
1955 - 1969	Sioux Falls Public Schools - Teacher Guidance Counselor Research Assistant Testing Coordinator Special Services Assistant
1954 - 1955	Jefferson City College - Instructor, Psychology

Honors:

1953 - 1954	Graduate Assistant - Experimental Psychology University of South Dakota
1964	Attendance at USOE sponsored practicum in guidance and counseling. University of South Dakota School of Education

Writing:

M. A. Thesis - Size Judgments As A Function Of The Ames Monocular Distorted Room

Writing (continued)

- Teaching Algebra to Ninth and Tenth Grade Students with the use of Programmed Materials and Teaching Machines

- A Consideration of Teaching Machines and Programmed Materials with Individualized Student Programs in Small Groups

- Third Grade Reading Instruction as a Function of Team Teaching vs. Single Teacher Method

- Teaching Reading to Sixth Grade Pupils with the use of Science Research Associates Reading Laboratory Materials

- A Consideration of Homogeneous Grouping of Fifth Grade Students

Appendix I

Letters of Support

UNIVERSITY OF *Minnesota*

COLLEGE OF EDUCATION · MINNEAPOLIS, MINNESOTA 55455

Office of the Dean

December 8, 1970

Dr. John C. Egermeier, Chief
Research Training Branch
National Center for Educational
Research and Development
Room 3051
400 Maryland Avenue S.W.
Washington, D.C. 20202

Dear Dr. Egermeier:

I should like to express my strong support to the proposed Midwest Educational Training Center being developed under the auspices of the Upper Midwest Regional Educational Laboratory. The need for training educational development and evaluation personnel is extremely great in the upper midwest region. The proposed Center offers flexibility and the opportunity for training at all levels of the educational profession.

I have closely followed the work of the consortium and pledge the support of the College of Education for this activity. The performance-based model for training development and evaluation personnel proposed is one worthy of continued study and research. Because our College is always receptive to new ideas, we are actively encouraging programs involving a number of different agencies in our attempt to continually improve educational training.

Sincerely yours,

Jack C. Merwin
Dean

JCM/bln

UNIVERSITY OF *Minnesota*

STUDENT COUNSELING BUREAU
101 EDDY HALL · MINNEAPOLIS, MINNESOTA 55455

December 11, 1970

Dr. John C. Egermeier
Acting Chief
Research Training Branch
National Center for Education, Research,
and Development
U. S. Office of Education
400 Maryland Avenue Southwest
Washington, D. C. 20202

Dear Dr. Egermeier:

I have been asked to comment on the Midwest Educational Training Center proposal for the formation of a consoritum to train personnel qualified to evaluate educational programs. In my capacity as the school testing consultant with the Minnesota State-Wide Testing Programs I work closely with counselors and administrators in Minnesota School Systems and it is my observation that there is a tremendous need for evaluation personnel. Because of our pupil testing program, schools often turn to us for assistance with problems having to do with measurement and evaluation. Hardly a day passes without a letter or phone call from a school requesting assistance with some school evaluation problem.

I have noticed a dramatic upturn in interest in evaluation on the part of Minnesota schools during the past few years. More than ever before schools are aware of the necessity for good evaluation and ~~we~~ are attempting evaluation projects.

In trying to assist schools with evaluation projects and in attempting to refer them for help elsewhere, I have become very much aware of the real shortage of qualified people who are available for assisting schools. I also know a few school districts which have hired full time evaluators recently and of others who would hire such people if they were available.

I firmly believe that this proposal holds great potential for making an important and needed impact for the improvement of education in Minnesota.

Sincerely yours,

Gary Joselyn

Gary Joselyn
School Testing Consultant

GJ/k